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ABSTRACT

This is a report of a large scale survey conducted to meet the need for up-to-date information on the sources, types, and amounts of support available to graduate students, on the effects of stipend holding on academic progress and patterns of employment, and on other aspects of graduate education. The report is based on a sample of graduate students enrolled in accredited institutions during the spring term, 1963. Self-administered schedules were sent to 25,000 students enrolled for study in 37 detailed fields of study, encompassing the physical sciences, life sciences, behavioral sciences, engineering, and humanities. The data are based on questionnaires completed by 20,114 graduate students sampled from 130 schools. (HS)

Report No. 103

# *graduate student finances, 1963*

A SURVEY OF THIRTY-SEVEN FIELDS OF STUDY

by

Seymour Warkov

Bruce Frisbie

and

Alan S. Berger



NORC



National Opinion Research Center / UNIVERSITY OF CHICAGO

SEPTEMBER, 1965

# GRADUATE STUDENT FINANCES, 1963

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Errata

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## INTRODUCTION

Today manpower in the scientific and technical fields is considered to be in short supply. Correlatively, advanced training in these fields and financial support for all phases of higher education are issues currently undergoing close scrutiny by students of manpower and education both within and outside of the Federal government. To meet the need for up-to-date information on the sources, types, and amounts of support available to graduate students, on the effects of stipend holding on academic progress and patterns of employment and on other aspects of graduate education, the National Science Foundation asked the National Opinion Research Center to conduct a large scale survey in the spring of 1963 concerning these topics. The first report on some of the major findings was titled Subsidies for Graduate Students (Warkov, 1964).

This final report extends the analysis presented in the preliminary report and describes the financial academic and employment circumstances of students enrolled in American graduate schools in thirty-seven fields of study in the spring of 1963. These fields cover the physical sciences, life sciences, behavioral sciences, engineering, and several of the humanities. The data describing these fields were taken from self-administered questionnaires completed by 20,114 graduate students sampled from 130 graduate schools (see Appendix 4 for a copy of the questionnaire). A description of the sample design appears in Appendix 1, which also includes a list of participating institutions and rates of cooperation by school and by field of study. Some 82 per cent of the eligible students completed usable questionnaires by the time the forms were processed for the first report. The 20,114 students returning usable questionnaires were weighted up to 21,898 cases on the basis of procedures described in this appendix.

The study population consisted of students enrolled for graduate study during the spring term, 1963, for purposes of securing advanced degrees. Postdoctoral students who were enrolled for study were excluded from the analysis, as were students who had not met the usual requirements for graduate standing in their school or who did not intend to become formal candidates for a graduate degree.

The text and accompanying tables of this report are based on a composite field classification that reduces the fields sampled for study into five broad fields of graduate study: engineering; physical sciences; life sciences; behavioral sciences; and the humanities. The detailed fields of graduate study were assigned to each composite field as follows:

| COMPOSITE FIELD OF GRADUATE STUDY[a] | DETAILED FIELD OF GRADUATE STUDY |
|---|---|
| Engineering | Chemical engineering<br>Civil engineering<br>Electrical engineering<br>Mechanical engineering<br>All other engineering fields |
| Physical sciences | Astronomy<br>Chemistry<br>General physical science<br>Geography<br>Geology and geophysics<br>Mathematics<br>Metallurgy<br>Meteorology<br>Oceonography<br>Physics<br>All other earth and physical sciences |
| Life sciences | Agriculture<br>Anatomy<br>Biochemistry<br>Biophysics<br>Botany<br>Forestry<br>General biology<br>Genetics<br>Microbiology<br>Pathology<br>Pharmacology<br>Physiology<br>Zoology<br>All other biology fields |
| Behavioral sciences | Anthropology<br>Economics<br>Psychology<br>Sociology |
| Humanities | English<br>History |

[a]Social work excluded from the analysis presented in the text of the report. This field was included in the set of special tabulations presented in Appendix 3 for all thirty-seven fields of graduate study.

The composite field level of analysis provides a broad overview of the basic set of fields of study covered in this survey. These composite fields comprise the forest, as it were, while the special set of detailed field tabulations presented in Appendix 3 afford the reader an opportunity to inspect the trees at closer range. The composite field analysis was derived from a self-weighted sub-sample secured on the basis of procedures described in Appendix 1. These procedures resulted in a sub-sample of 7,028 cases before exclusions. This sub-sample was used rather than the total sample for several reasons: first, the initial analysis was based on information processed on IBM unit record machines, especially the IBM 083 and 101 machines. Both the press of time and the scope of analysis initially planned dictated a reduction in the case base given the available data processing equipment. Second, different sampling ratios were used for each of the thirty-seven fields. Consequently, a multivariate analysis of the finances of graduate students in which the detailed fields were collapsed into broader categories was not feasible unless the cases were adjusted to take into account these different sampling ratios. Thus a combination of mechanical and technical constraints dictated the choice of the self-weighted sub-sample.

The reader will note that our composite field of humanities is based on two fields--history and English. Students in these two fields comprise approximately two-thirds of all students undertaking graduate work in the area of study usually designated as the humanities. While these are the two largest fields of study in the area of humanities, we wish to draw attention to the fact that this composite field was not as well sampled in terms of detailed fields of study as were the scientific and engineering fields. When we refer to the humanities fields in the text, our conclusions are based on data drawn from the two numberically most important fields of study in this general area. Furthermore, it should be emphasized that this study does not purport to represent all fields of graduate study. No conclusions may be drawn from the data presented in this survey concerning financial support in the field of education or in professional fields such as medicine, dentistry, or law. The reader is cautioned that our use of the term "stipends" and the classification of types of stipends follows a notational convention employed in other surveys conducted at NORC and does not conform to the various systems of classification that may be in use at other private and public agencies.

The reader should also bear in mind that the current pattern of support for graduate level study is immensely complicated and that the most seasoned observer often has difficulty in discerning the multiple institutional arrangements that enter into the financing of American graduate study. These considerations must be kept in the foreground in evaluating information on certain aspects of the financial underpinnings of higher education gathered from students by means of self-administered questionnaires. For example, some 7 per cent of the stipend recipients in this sample reported that their first stipend during the 1962-63 academic year was secured from "the school I am now attending, but I do not know the source."[1] On the other hand, who but the graduate student himself is best informed on all academic and nonacademic sources of and amounts of income and expenditures during the period under study? In the main, then, information presented in this report should be helpful to personnel and agencies responsible for the formulation of policies suitable for graduate level study in the sciences and engineering in the mid-sixties.

The chapters of this report are as follows:

Chapter I --Characteristics of Academic and Employment Fields--provides a portrait of the academic and employment characteristics of all bonafide graduate students in five composite fields of study in enrolled American graduate schools without regard to citizenship, a total of 6,814 students, both American citizens and aliens.

Chapter II --Stipend Holding in American Graduate Schools--describes the extent of stipend holding in the five composite fields of study; sources and types of stipends held during the academic year 1962-63; dollar amounts; and academic and other correlates of stipend holding. The discussion in this chapter and those that follow are based on students who were American citizens in spring, 1963. These total 5,936 cases unless otherwise indicated.

[1]A special study was conducted to determine accuracy in reporting the source of stipends reported by one group of recipients: students reporting that they held a fellowship from the National Science Foundation during the academic year 1962-63. The results of this "validity" study are discussed in Appendix 7.

Chapter III--Enrollment for Graduate Study and Stipend Support--considers the pattern of part-time and full-time study in five composite fields; stipend support and other correlates of full-time study; readiness for full-time study and reasons for not studying full time.

Chapter IV --Institutional Correlates of Stipend Holding--analyzes the support pattern of students in terms of selected institutional characteristics of schools attended during the spring term, 1963.

Chapter V --Sources of Income--offers a detailed description of all sources and amounts of income reported by students in the five composite fields of study and traces the pattern of stipend and nonstipend support of students in various academic, institutional, and other categories.

Chapter VI --Expenses and Loans--presents a detailed analysis of the academic and nonacademic expenses incurred by students in the five composite fields of study during 1962-63; considers academic and certain other correlates of the pattern of expenditures; and also describes selected characteristics of students in these fields that are associated with reliance on loans for academic and other purposes during the year under study.

Chapter VII--The Delayed Doctorate--defines and describes the pattern of delay in the five composite fields of study among students who expect to secure the doctorate; considers the pattern of delay in terms of stipend holding, selected academic characteristics, and other personal and social aspects of graduate level study.

Chapter VIII--Summary of Findings--provides a review of the major findings of this survey.

## CHAPTER 1

## CHARACTERISTICS OF ACADEMIC AND EMPLOYMENT FIELDS

The inadequate supply of scientific and technical manpower has led to considerable research on the development of careers in scientific and professional occupations. At NORC alone, a number of studies (Davis, 1964, 1965; Greeley, 1963; Miller, 1963; Warkov, 1965) have documented the differences among college students that give rise to the choice of those career fields which entail graduate or professional study beyond the baccalaureate. These studies have delineated those social, psychological, and demographic variables which bear on the selection of one rather than another career field in occupations involving advanced study. The financial circumstances of persons in the midst of their graduate studies in the arts and sciences have been described as well (Davis, 1962).

Assuming that the nation's manpower requirements necessitate substantial growth among the scientific, professional, and technical components of the labor force, then the financial factor in graduate education may be a point of intervention for the purpose of facilitating the rapid completion of graduate degree programs. We know that social and intellectual factors are important in shaping career choice; however, there is very little that the policy planner can do about the social class origins, religious backgrounds, or academic potentials of college graduates currently entering the labor force or standing on the threshold of graduate study. But a society with a steadily increasing gross national product may well give attention to the role of scholarships, fellowships, and other kinds of financial support in attracting students to study programs in fields of scarce manpower supply and moving them through graduate school as rapidly as possible after they have been accepted for advanced study.

Government agencies whose mission is to foster the development of manpower adequate to the educational and research needs of this decade have supported fellowship programs for graduate students in scientific fields of study. Fellowships and other forms of stipend support have become an important but by no means sole source of income for a majority of graduate students. In his 1957 survey of arts and science students, Davis (1962, pp. 58-73) found that one out of four graduate students in arts and science fields depended on his spouse's employment for support. Furthermore, he found that fields of study differed substantially in the chances their students had for securing stipend support and in the types of stipend provided.

Again, in 1963, the present study found substantial variation by field of study in the pattern of stipend support; academic experiences also differed extensively in various fields of study.

If we are tc comprehend these differences in financial support in the spring of 1963 among students enrolled in the fields selected for study in the present survey, then it is important to consider the students' financial conditions in the light of prevailing academic arrangements and employment patterns. In this chapter we document some of these differences between the composite fields of study and set the stage for subsequent analysis of materials that describe stipend and other forms of support for graduate study.

## An Academic Portrait of the Fields of Study

Assessing the academic circumstances of the students enrolled for graduate study requires some understanding of their academic "origins," i.e., such academic background characteristics as undergraduate grade point average (GPA), field of bachelor's degree, whether the undergraduate degree was taken at the school in which student was presently enrolled, and the time gap between the recipt of the bachelor's degree and entry into graduate school. To take one example, did students in the several composite fields of graduate study differ on the basis of their undergraduate performance?

Table 1.1 shows that one-quarter of the entire sample had an undergraduate GPA of A or A-; another one-quarter reported a GPA of B+, while one-third scored an average of B or B-. Only one-tenth of the students in these fields averaged C+, and a handful were enrolled for graduate study in the spring of 1963, despite an undergraduate GPA of C. Not surprisingly, academic performance at the undergraduate level determined to a considerable extent whether a student was likely to be enrolled for advanced study in the fields under consideration in this survey.

TABLE 1.1

UNDERGRADUATE GRADE POINT AVERAGE BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Grade Point Average | Engineering | Physical Science | Humanities | Behavioral Science | Life Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| A, A- . . . . | 28 | 27 | 26 | 20 | 18 | 25 |
| B+. . . . . . | 23 | 24 | 27 | 27 | 22 | 24 |
| B, B- . . . . | 36 | 36 | 35 | 37 | 41 | 37 |
| C+. . . . . . | 10 | 10 | 9 | 11 | 14 | 11 |
| C . . . . . . | 2 | 3 | 3 | 3 | 4 | 3 |
| Less than C . | * | * | * | 1 | * | * |
| Total | 99[a] | 100 | 100 | 99 | 99 | 100 |
| N. . . . | 1,568 | 1,796 | 940 | 1,146 | 1,169 | 6,619 |
| NA, no B.A. | 57 | 41 | 25 | 28 | 44 | 195 |
| Total N | 1,625 | 1,837 | 965 | 1,174 | 1,213 | 6,814 |

*Less than one-half of 1 per cent.

[a]Due to rounding error, percentages vary from 99 to 101.

Though it does not take into account differences in quality of the undergraduate institution, the table does demonstrate differences between the five composite fields in their recruitment of talented students. The highest proportion of students whose undergraduate GPA was A or A- was enrolled in engineering (28 per cent), the physical sciences (27 per cent), and the humanities (26 per cent), while the remaining fields did not fare as well in drafting students from the top quarter of the sample: in the behavioral sciences only 20 per cent and in the life sciences only 18 per cent did A or A- work as undergraduates. Presumably talent and stipend support for graduate study in these fields should go hand in hand; in Chapter 2 it will be shown that this is not necessarily the case.

There is a widely shared belief in higher education that it is beneficial for undergraduates to move on to other institutions in order to be exposed to a variety of new intellectual perspectives. This does appear to be the prevailing pattern: three out of four students in this sample were in fact studying at institutions other than the one at which the bachelor's degree was taken. Institutional mobility occurred most frequently among students enrolled for graduate study in the physical sciences: fully 80 per cent had left their alma maters to take graduate degrees at another school. Engineering graduate students were least likely to have moved, but even in this group two out of three students were no longer at the institutions granting their bachelor's degrees (Table 1.2).

The fact that the overwhelming majority of students changed institutions does not imply discontinuity in field of study, however. On the contrary: the undergraduate major is the best predictor available of graduate studies. Table 1.3 shows that close to eight out of ten students in the sample were still in the same general field of study pursued at the undergraduate level.

Nevertheless, field differences were found in the proportion of students whose composite undergraduate field of study coincided with their graduate field in the spring of 1963. The lowest turnover in fields of study occurred among engineers: 92 per cent of this group of graduate students had received their bachelor's degree in the same field. Physical science ranked second in homogeneity of field origins, with some eight out of ten completing their undergraduate work in a physical science field of study. Of the remainder, 10 per cent had engineering backgrounds, another 3 per cent took education degrees in natural science fields of study, and the rest were scattered among other undergraduate fields. The humanities ranked third among the five composite fields in the proportion

TABLE 1.2

UNDERGRADUATE ORIGINS BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Undergraduate School and Graduate School | Physical Science | Life Science | Behavioral Science | Humanities | Engineering | Total, Five Fields |
|---|---|---|---|---|---|---|
| Different . . . . | 80 | 74 | 74 | 73 | 68 | 74 |
| Same. . . . . . . | 20 | 26 | 26 | 27 | 33 | 26 |
| Total per cent . . | 100 | 100 | 100 | 100 | 101 | 100 |
| N. . . . . . . | 1,799 | 1,172 | 1,153 | 941 | 1,576 | 6,641 |
| NA, no B.A. | 38 | 41 | 21 | 24 | 49 | 173 |
| Total N. . . | 1,837 | 1,213 | 1,174 | 965 | 1,625 | 6,814 |

TABLE 1.3

FIELD OF UNDERGRADUATE MAJOR BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Field of Undergraduate Major | Engineering | Physical Science | Humanities | Life Science | Behavioral Science |
|---|---|---|---|---|---|
| Engineering . . . | 92 | 11 | * | 2 | 3 |
| Physical science. | 6 | 80 | 2 | 12 | 4 |
| Humanities. . . . | * | 1 | 76 | 2 | 12 |
| Life science. . . | * | 2 | 1 | 74 | 5 |
| Behavioral science | * | 1 | 8 | * | 65 |
| Education . . . . | * | 3 | 11 | 6 | 4 |
| Health. . . . . . | - | * | * | 3 | 1 |
| Other . . . . . . | 1 | 1 | 2 | 1 | 7 |
| Total. . . . | 99 | 99 | 100 | 100 | 101 |
| N. . . . . . . | 1,615 | 1,831 | 956 | 1,201 | 1,170 |
| NA, no B.A.. | 10 | 6 | 9 | 12 | 4 |
| Total N. . . | 1,625 | 1,837 | 965 | 1,213 | 1,174 |

*Less than one-half of 1 per cent.

taking undergraduate degrees in their 1963 fields of study (76 per cent), with one in ten moving in from education and close to one in ten shifting from a behavioral science field. Similarly, three out of four students undertaking graduate work in the life sciences at the time of the survey were in the same composite field of study in college. Of the remainder, some 12 per cent were formerly in the physical sciences (almost all concentrated in chemistry), and 6 per cent were formerly in education (with specialties in natural sciences). It is noteworthy that the behavioral sciences had the highest proportion of students with undergraduate origins in other fields of study: 12 per cent of the behavioral science students in graduate schools reported a humanities field as their major during college, "other" fields accounted for 7 per cent (the bulk were law or pre-law), and 5 per cent had switched from the life sciences. In sum, when the composition of the five broad fields of graduate study is characterized by the undergraduate field of study, the behavioral sciences especially were accessible to students from other fields while engineering was the most inbred of the fields included in this survey. More important, the vast majority of these students maintained their undergraduate field. Thus continuity rather than change seems to be characteristic when a comparison is made between bachelors' and post-bachelors' field of study.

If higher education is seen as a pipeline that channels America's manpower into a variety of occupational and professional streams (and the above findings support this point of view), then a delay of one year or more in initiating graduate study after the completion of the undergraduate program may indicate that there are obstructions to the most efficient utilization of the system. In reply to the question "How many calendar years elapsed between the time you received your bachelor's degree and the start of your graduate studies?" close to two out of three (62 per cent) reported that graduate study was initiated during the calendar year immediately following completion of the bachelor's program. Table 1.4 shows that the remaining one out of three experienced a hiatus of at least one year: 9 per cent of the sample circled "one year" and another 7 per cent indicated that two years elapsed before graduate study began. A lapse of four years or less accounts for more than 85 per cent of the sample, with the remainder taking five or more years off from formal study before beginning graduate work.

TABLE 1.4

HIATUS BETWEEN COLLEGE GRADUATION AND START OF GRADUATE SCHOOL, BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Length of Hiatus | Physical Science | Behavioral Science | Life Science | Humanities | Engineering | Total, Five Fields |
|---|---|---|---|---|---|---|
| Less than 1 year. . . | 68 | 66 | 61 | 58 | 57 | 62 |
| 1 year. . . . | 8 | 9 | 8 | 12 | 10 | 9 |
| 2 years . . . | 6 | 6 | 8 | 8 | 9 | 7 |
| 3 years . . . | 5 | 4 | 5 | 6 | 6 | 5 |
| 4 years . . . | 4 | 3 | 3 | 3 | 4 | 4 |
| 5-9 years . . | 6 | 7 | 9 | 8 | 10 | 8 |
| 10 or more years . . . | 4 | 6 | 5 | 6 | 5 | 5 |
| Total. . | 101 | 101 | 99 | 101 | 101 | 100 |
| N. . . . | 1,802 | 1,152 | 1,172 | 944 | 1,582 | 6,652 |
| NA, no B.A. | 35 | 22 | 41 | 21 | 43 | 162 |
| Total N. | 1,837 | 1,174 | 1,213 | 965 | 1,625 | 6,814 |

Physical science and behavioral science students were somewhat more likely than students in other fields to enter graduate school less than one year after receiving their bachelors' degrees, while humanities and engineering students were less likely to do so, furthermore, inspection of Table 1.4 shows that physical science had the lowest proportion of students reporting a hiatus of five years or more (10 per cent), while the remaining fields had almost identical proportions of students who were out of school for this amount of time (about 15 per cent in each field).

Variations by field of study notwithstanding, the majority of students in all fields of graduate study covered in this survey (1) were engaged in graduate study at an institution other than the one in which the bachelor's degree was taken; (2) continued in the same general field of study in which the undergraduate degree was secured; and (3) initiated graduate study within twelve months after completing their undergraduate studies.

Academic Characteristics, Spring, 1963

We have shown that graduate students in the sciences, engineering, and certain of the humanities can be measured by a yardstick of their bachelor's degree origins; on the whole these students experienced institutional mobility, continuity in fields of study, and relatively uninterrupted study activity in the transition from college to graduate school. What about their academic circumstances? How many students in the five composite fields were working for the doctorate? What was their enrollment status? In this section we will describe these and other characteristics of their collective academic activity.

Table 1.5 shows that one out of three students in the sample carried a full course load in a program that permitted "full-time" study; another three out of ten were carrying less than a full course load in this type of program, and two out of ten considered their enrollment for graduate study primarily in terms of thesis work, independent research, and the like. Some 14 per cent said they were enrolled for work at a night school or in a program that did not permit full-time study. According to these students, a great majority of the sample were not registered for full-time course work during the spring term.

Substantial field differences in the pattern of course work occurred: Engineering and humanities were less likely to have students carrying a full course load, but close to one-half of the students in behavioral science were in this category. The most striking field differences pertained to night school attendance or enrollment in a program that precluded full-time study: some 26 per cent of the engineering students reported this to be the case in contrast with 15 per cent in humanities, 14 per cent in physical sciences, and only 5 per cent in life and behavioral sciences.

Often a number of academic requirements are faced simultaneously by the student. It is not unusual to take one or more courses, prepare for comprehensive examinations, and also allocate time for the development of thesis proposals during any given term. Table 1.6 shows that some three out of four (77 per cent) of the students were taking courses or seminars, and over four out of ten (43 per cent) were engaged in research for and preparation of the dissertation. One out of five was preparing for comprehensive or qualifying examinations and some 15 per cent were working at

TABLE 1.5

SPRING, 1963, REGISTRATION BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Enrollment Status | Behavioral Science | Life Science | Physical Science | Humanities | Engineering | Total, Five Fields |
|---|---|---|---|---|---|---|
| Full course load or greater . . | 43 | 37 | 35 | 30 | 28 | 34 |
| Less than full course load. . . . | 30 | 31 | 27 | 36 | 27 | 30 |
| No courses; thesis or independent research only. . . . | 22 | 27 | 24 | 19 | 18 | 22 |
| Night school or other program in which full-time study is impossible . . . | 5 | 5 | 14 | 15 | 26 | 14 |
| Correspondence courses . . | * | * | - | * | * | * |
| Total. . | 100 | 100 | 100 | 100 | 99 | 100 |
| N. . . . | 1,159 | 1,181 | 1,790 | 937 | 1,588 | 6,625 |
| NA . . . | 15 | 32 | 47 | 28 | 37 | 159 |
| Total N. | 1,174 | 1,213 | 1,837 | 965 | 1,625 | 6,814 |

*Less than one-half of 1 per cent.

their foreign language requirements. Because of their frequent enrollment in night school programs, it is not surprising to learn that engineering students were less likely than others to be involved in comprehensives or taking language examinations.

Differences in enrollment status and in the kinds of academic requirements that these graduate students were facing in Spring 1963, were reflected in the amount of time allocated to study. Table 1.7 shows responses to the question "On the average, how many hours a week were you engaged in academic study this term? Include thesis work, courses, practicum, study time, etc., required for the degree." There was a broad spread in the amount of time graduate students committed to academic study. At the one extreme, one in ten gave less than ten hours a week to academic work, and at the other, another one in ten students spent an average of seventy hours a week or more in these activities. Students at each end of the time band obviously lived in different worlds; to say that both groups are "graduate students" hardly captures their respective life styles.

TABLE 1.6

DEGREE REQUIREMENTS BEING WORKED ON IN SPRING TERM, 1963, BY COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Degree Requirements | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
|---|---|---|---|---|---|---|
| Courses or seminars. . | 74 | 80 | 72 | 78 | 79 | 77 |
| Preparing for qualifying comprehensive exams . . . | 23 | 12 | 17 | 23 | 21 | 19 |
| Languages exams . . . | 16 | 9 | 19 | 16 | 16 | 15 |
| Research for and preparation of thesis. . . | 46 | 36 | 59 | 42 | 28 | 43 |
| Other . . . . | 2 | 2 | 4 | 4 | 3 | 3 |
| None. . . . . | * | * | - | - | * | * |
| Total. . | 161[a] | 139 | 171 | 163 | 147 | 157 |
| N. . . . | 1,828 | 1,608 | 1,210 | 1,166 | 958 | 6,770 |
| NA . . . | 9 | 17 | 3 | 8 | 7 | 44 |
| Total N. | 1,837 | 1,625 | 1,213 | 1,174 | 965 | 6,814 |

*Less than one-half of 1 per cent.

[a]Adds to more than 100 per cent because of multiple responses.

TABLE 1.7

HOURS PER WEEK IN ACADEMIC STUDY BY
COMPOSITE FIELD OF GRADUATE STUDY

| Hours Per Week in Academic Study | Engineering | Humanities | Physical Science | Behavioral Science | Life Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Less than 10. | 15 | 12 | 9 | 7 | 4 | 10 |
| 10-19 . . . . | 20 | 18 | 13 | 12 | 10 | 15 |
| 20-39 . . . . | 22 | 26 | 22 | 27 | 19 | 23 |
| 40-59 . . . . | 26 | 28 | 34 | 35 | 33 | 31 |
| 60-69 . . . . | 9 | 10 | 13 | 13 | 18 | 13 |
| More than 69. | 7 | 6 | 9 | 6 | 15 | 9 |
| Total. . | 99 | 100 | 100 | 100 | 99 | 101 |
| N. . . . | 1,603 | 952 | 1,813 | 1,162 | 1,200 | 6,730 |
| NA . . . | 22 | 13 | 24 | 12 | 13 | 84 |
| Total N. | 1,625 | 965 | 1,837 | 1,174 | 1,213 | 6,814 |

Across the board, one-fourth of the sample gave less than twenty hours a week to graduate study, close to one-fourth (23 per cent) studied twenty to thirty-nine hours weekly, about three in ten reported forty to fifty-nine hours of academic work per week, and another 22 per cent were spending an average of sixty hours per week or more on academic activity.

Composite differences in the allocation of time to academic work were consistent with what was discerned on enrollment and academic requirements: Engineering students were least likely to give substantial amounts of time to academic work. Some 15 per cent of these students gave less than ten hours per week to academic work and over one-third studied less than twenty hours weekly.[1] One-third of the life science students studied an average of sixty hours weekly or more, followed, in descending order, by students in the physical sciences, behavioral sciences, humanities, and engineering. Thus, fields differed substantially in the amount of time their graduate students devoted to academic endeavor. As we will see later, fellowships, scholarships, and other types of financial support for graduate study had an important influence on the types of enrollment that prevailed in each of these composite fields.

[1]A majority of engineering students were enrolled for part-time study and many were employed in a regular full time job (see Table 1.18). Also, differences in the nature of the programs offered in these fields of study influenced the amount of time given to academic study.

Despite the variation in course loads, academic requirements on which students were working, and the amount of time they were giving to their graduate study, the great majority of these students were working toward the same goal: a doctorate. Fully 77 per cent of the sample said they were aiming at a doctorate in their present or future study program. Save for a handful who were enrolled for a "first professional degree," the remainder expected the master's as their terminal degree. Variations by field of study have a familiar ring: one-third of the engineering students and one-fourth of those in the humanities expected to stop at the master's level in contrast with 18 per cent in the physical sciences, 14 per cent in the life sciences, and only 13 per cent in the behavioral sciences (Table 1.8).

TABLE 1.8

HIGHEST DEGREE EXPECTED BY COMPOSITE FIELD OF GRADUATE STUDY

| Highest Degree Expected | Per Cent Expecting Degree | | | | | |
|---|---|---|---|---|---|---|
| | Behavioral Science | Life Science | Physical Science | Humanities | Engineering | Total, Five Fields |
| First professional. . . | * | 3 | * | * | 1 | 1 |
| Master's. . . | 13 | 14 | 18 | 25 | 37 | 22 |
| Doctorate . . | 87 | 82 | 81 | 74 | 62 | 77 |
| Other . . . . | * | * | * | * | * | * |
| Total. . | 100 | 99 | 99 | 99 | 100 | 100 |
| N. . . . | 1,156 | 1,202 | 1,802 | 947 | 1,589 | 6,696 |
| NA . . . | 18 | 11 | 35 | 18 | 36 | 118 |
| Total N. | 1,174 | 1,312 | 1,837 | 965 | 1,625 | 6,814 |

With the exception of engineering, students in every field who were aming for the doctorate as their highest degree were more likely to report that the degree was to be taken in their present field of study than was the case among the students aiming for the master's as the terminal degree.

According to Table 1.9, 72 per cent of the behavioral science students expecting the master's (to take one example) planned to take this highest degree in a behavioral science field, while the corresponding percentage among students who expected the doctorate was 91. As for engineering students, few of them came in from other undergraduate fields and scarcely any expected to transfer to other fields to take their highest degree: 97 per cent of those seeking the master's and 92 per cent of those aiming for the doctorate expected their highest degree in engineering.

Ignoring for the moment whether the highest degree expected is a doctorate or a master's, Table 1. 10 shows that only 14 per cent of the sample expected to receive their terminal degree during 1963. By the end of 1964, however, about four out of ten said they would be through with their graduate study. Skipping to the end of 1966, eight out of ten students should have the highest degree they expect to receive in graduate school. Interestingly, there are only minor differences by field when students are compared across the board in terms of expected duration of graduate study.

TABLE 1.10

ANTICIPATED DATE OF HIGHEST DEGREE EXPECTED AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Anticipated Date of Highest Degree Expected | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
|---|---|---|---|---|---|---|
| 1963. . . . . | 15 | 17 | 14 | 14 | 10 | 14 |
| 1964. . . . . | 25 | 25 | 25 | 25 | 21 | 24 |
| 1965. . . . . | 23 | 21 | 23 | 25 | 21 | 23 |
| 1966. . . . . | 17 | 16 | 17 | 17 | 19 | 17 |
| 1967. . . . . | 9 | 7 | 8 | 9 | 10 | 9 |
| 1968. . . . . | 5 | 6 | 7 | 5 | 8 | 6 |
| 1969. . . . . | 2 | 2 | 2 | 2 | 3 | 2 |
| 1970. . . . . | 4 | 4 | 2 | 2 | 6 | 4 |
| After 1970. . | 1 | 2 | 1 | 1 | 3 | 1 |
| Total. . | 101 | 100 | 99 | 100 | 101 | 100 |
| N. . . . | 1,679 | 1,470 | 1,106 | 1,080 | 822 | 6,157 |
| NA . . . | 158 | 155 | 107 | 94 | 143 | 657 |
| Total N. | 1,837 | 1,625 | 1,213 | 1,174 | 965 | 6,814 |

TABLE 1.9

COMPOSITE FIELD OF GRADUATE STUDY, HIGHEST DEGREE EXPECTED, AND COMPOSITE FIELD OF STUDY FOR HIGHEST DEGREE

(Per Cent in Field of Study for Highest Degree)

| Highest Degree Expected | Physical Science | Engineering | Health Fields | Life Science | Behavioral Science | Education | Humanities | Others | Per Cent | N | NA | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical science | | | | | | | | | | | | |
| Master's . . . . | 80 | 5 | - | 2 | 1 | 11 | - | 1 | 100 | 325 | 1 | 326 |
| Doctorate. . . . | 94 | 2 | - | 2 | - | 1 | - | - | 99 | 1,462 | 5 | 1,467 |
| | | | | | | | Total . . . . . . . . . . . . | | | | | 1,793 |
| | | | | | | | Others, including NA. . . . . | | | | | 44 |
| | | | | | | | Total N. . . . . . . . . . | | | | | 1,837 |
| Engineering | | | | | | | | | | | | |
| Master's . . . . | 1 | 97 | - | - | - | - | - | 1 | 99 | 586 | 4 | 590 |
| Doctorate. . . . | 6 | 92 | - | 1 | - | - | - | - | 99 | 970 | 9 | 979 |
| | | | | | | | Total . . . . . . . . . . . . | | | | | 1,569 |
| | | | | | | | Others, including NA. . . . . | | | | | 56 |
| | | | | | | | Total N. . . . . . . . . . | | | | | 1,625 |
| Life science | | | | | | | | | | | | |
| Master's . . . . | 2 | 1 | 2 | 80 | 1 | 14 | - | 1 | 100 | 166 | 1 | 167 |
| Doctorate. . . . | 2 | - | 2 | 93 | - | 3 | - | - | 100 | 982 | 6 | 988 |
| | | | | | | | Total . . . . . . . . . . . . | | | | | 1,155 |
| | | | | | | | Others, including NA. . . . . | | | | | 58 |
| | | | | | | | Total N. . . . . . . . . . | | | | | 1,213 |
| Behavioral science | | | | | | | | | | | | |
| Master's . . . . | 1 | - | 1 | 6 | 72 | 8 | 2 | 9 | 99 | 143 | 2 | 145 |
| Doctorate. . . . | - | - | - | 1 | 91 | 5 | 1 | 1 | 99 | 999 | 3 | 1,002 |
| | | | | | | | Total . . . . . . . . . . . . | | | | | 1,147 |
| | | | | | | | Others, including NA. . . . . | | | | | 27 |
| | | | | | | | Total N. . . . . . . . . . | | | | | 1,174 |
| Humanities | | | | | | | | | | | | |
| Master's . . . . | - | - | - | - | 1 | 20 | 79 | - | 100 | 231 | 3 | 234 |
| Doctorate. . . . | - | - | - | - | 3 | 6 | 90 | 1 | 100 | 697 | 7 | 704 |
| | | | | | | | Total . . . . . . . . . . . . | | | | | 938 |
| | | | | | | | Others, including NA. . . . . | | | | | 27 |
| | | | | | | | Total N. . . . . . . . . . | | | | | 965 |

When fields are further broken down by the highest degree expected (as shown in Table 1.11), the following results obtain:

1. Life and behavioral science students expecting to terminate their graduate study with the master's degree indicated that they would secure the degree at a more rapid pace than students in the other fields of study: Only one in five students in these two fields planned still to be working for the master's degree by the end of 1964. In contrast, from 32 to 37 per cent of the students in the physical sciences, engineering, and the humanities said they would not have their terminal master's by the end of 1964.

2. The pattern by composite field among students seeking the doctorate was quite different. Close to one-third of the students in every field except the humanities expected to secure this degree by the end of 1964; but only one-fifth of the humanities students aiming for the doctorate as their highest degree thought they would finish so soon.[2] The gap between the humanities and the remaining fields of study in time taken to complete the doctoral program was expected to persist through the calendar years of 1965 and 1966.

However, this does not tell the whole story. For in distinguishing between those students seeking the master's degree and the doctorate we have not considered that some of those seeking the doctorate will also acquire a master's along the way, and some will not.[3]

Students were classified on the basis of three questions: "What is the highest degree you now hold?" "What is the next degree you expect to receive?" "What is the highest degree you expect?"

---

[2]This table shows data that forecast certain outcomes: only a follow-up survey could determine whether these expectations are realized. Other sources indicate substantial variation among the scientific and engineering fields in the mean B.A. to Ph.D. time lapse among doctoral recipients, 1960-61 (see Harmon and Soldz, 1963, pp. 42-43).

[3]This is not always a matter of choice for the graduate student who must conform to the rules and regulations of his school and department. In some schools and in certain fields of study, students may skip the master's and proceed directly to the doctorate. We did not distinguish between schools and fields of study in which the sequence of degree programs is mandatory or optional.

TABLE 1.11

COMPOSITE FIELD OF GRADUATE STUDY, HIGHEST DEGREE EXPECTED, AND ANTICIPATED DATE

(Per Cent Expecting Degree During Year)

| Highest Degree Expected | 1963 | 1964 | 1965 | 1966 | 1967 | All Others | Per Cent | N | NA | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Physical science | | | | | | | | | | |
| Master's . . . . | 26 | 39 | 18 | 8 | 6 | 3 | 100 | 298 | 28 | 326 |
| Doctorate. . . . | 12 | 22 | 24 | 20 | 10 | 13 | 101 | 1,365 | 102 | 1,467 |
| | | | | | | Total . . . . . . . . . . | | | | 1,793 |
| | | | | | | Others, including NA. . | | | | 44 |
| | | | | | | Total N. . . . . . . . | | | | 1,837 |
| Engineering | | | | | | | | | | |
| Master's . . . . | 28 | 33 | 19 | 13 | 5 | 3 | 101 | 549 | 41 | 590 |
| Doctorate. . . . | 11 | 20 | 22 | 18 | 9 | 20 | 100 | 903 | 76 | 979 |
| | | | | | | Total . . . . . . . . . . | | | | 1,569 |
| | | | | | | Others, including NA. . | | | | 56 |
| | | | | | | Total N. . . . . . . . | | | | 1,625 |
| Life science | | | | | | | | | | |
| Master's . . . . | 32 | 44 | 15 | 3 | 3 | 3 | 100 | 158 | 9 | 167 |
| Doctorate. . . . | 12 | 22 | 24 | 19 | 9 | 14 | 100 | 905 | 83 | 988 |
| | | | | | | Total . . . . . . . . . . | | | | 1,155 |
| | | | | | | Others, including NA. . | | | | 58 |
| | | | | | | Total N. . . . . . . . | | | | 1,213 |
| Behavioral science | | | | | | | | | | |
| Master's . . . . | 40 | 37 | 11 | 4 | 6 | 1 | 99 | 134 | 11 | 145 |
| Doctorate. . . . | 11 | 23 | 28 | 18 | 9 | 11 | 100 | 931 | 71 | 1,002 |
| | | | | | | Total . . . . . . . . . . | | | | 1,147 |
| | | | | | | Others, including NA. . | | | | 27 |
| | | | | | | Total N. . . . . . . . | | | | 1,174 |
| Humanities | | | | | | | | | | |
| Master's . . . . | 23 | 42 | 18 | 9 | 5 | 3 | 100 | 209 | 25 | 234 |
| Doctorate. . . . | 6 | 14 | 22 | 22 | 11 | 26 | 101 | 605 | 99 | 704 |
| | | | | | | Total . . . . . . . . . . | | | | 938 |
| | | | | | | Others, including NA . . | | | | 27 |
| | | | | | | Total N. . . . . . . . | | | | 965 |

While further refinements are possible, there are, broadly speaking, three types of students. These are: (1) students expecting a terminal master's degree (21 per cent of the sample); (2) students going on for both the master's and the doctorate (67 per cent of this sample); and (3) students expecting to take the doctorate without stopping for the master's degree (12 per cent).

With this information on hand, it is possible to learn something about the academic routes taken by these students and the variations in behavior that are involved in reaching their goals. For example, Table 1.12 shows that these three types of students differed in the extent to which their graduate field of study corresponded to their undergraduate majors.

With the exceptions of engineering and life science students, graduate students expecting a terminal master's degree were less likely to have continued in their undergraduate fields of study than those graduate students expecting both a master's and a doctorate. The latter students were less likely to report the same field for both undergraduate and graduate study than those going on directly for the doctorate. We would expect this type of pattern because those who (regardless of field) plan to stop with the master's degree are the ones least likely to require depth of knowledge in their field. They may start from scratch after taking a bachelor's degree in another field and satisfy the requirements for the master's degree after relatively short exposure to the subject matter of the new field. On the other hand, the bachelor's recipient going directly on for the doctorate can more readily expect to bypass the master's degree if he seeks the doctorate in his undergraduate field of study.

The two fields which do not fit the pattern of findings described above, engineering and the life sciences, are perhaps special cases. In engineering very few students expected to go directly from the bachelor's degree to the doctorate. Almost identical percentages of those who wanted the terminal M.A. or the M.A. combined with the Ph.D. had engineering as both their undergraduate and graduate fields.

In the life sciences one-fourth of the students going directly from the bachelor's to the doctorate had their undergraduate training in the physical sciences. This reflects the many advances made in the biophysical fields in recent years, and the close relationship that has developed between

TABLE 1.12

FIELD OF STUDY, DEGREE SOUGHT, AND FIELD OF UNDERGRADUATE MAJOR

| Field of Study | Degree Sought | Field of Undergraduate Study | | | | | | | | Total Per Cent | N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physical Science | Engineering | Life Science | Health Professions | Behavioral Science | Humanities | Education | Other | | |
| Physical science | Terminal Master's . . | 68 | 14 | 2 | 1 | 1 | 3 | 8 | 2 | 99 | 309 |
| | Master's and Doctorate | 81 | 12 | 1 | * | 1 | 2 | 2 | 1 | 101 | 1,108 |
| | Doctorate only. . . . | 91 | 5 | 1 | 1 | * | * | 1 | - | 99 | 350 |
| Engineering | Terminal Master's . . | 5 | 94 | - | - | - | 1 | - | 1 | 101 | 556 |
| | Master's and Doctorate | 7 | 92 | * | - | * | * | * | * | 99 | 905 |
| | Doctorate only. . . . | 11 | 89 | * | - | - | - | - | - | 100 | 62 |
| Life sciences | Terminal Master's . . | 7 | 2 | 69 | 4 | 1 | 2 | 13 | 1 | 99 | 158 |
| | Master's and Doctorate | 10 | 1 | 77 | 3 | * | 2 | 6 | * | 99 | 806 |
| | Doctorate only. . . . | 25 | 1 | 67 | 2 | * | 3 | 1 | - | 99 | 153 |
| Behavioral science | Terminal Master's . . | 3 | 2 | 14 | 2 | 49 | 9 | 4 | 16 | 99 | 137 |
| | Master's and Doctorate | 4 | 3 | 3 | 1 | 66 | 12 | 4 | 6 | 99 | 832 |
| | Doctorate only. . . . | 6 | 4 | 3 | - | 75 | 8 | 1 | 3 | 100 | 155 |
| Humanities | Terminal Master's . . | * | - | * | * | 6 | 69 | 22 | 2 | 99 | 220 |
| | Master's and Doctorate | 2 | * | 1 | - | 9 | 78 | 8 | 2 | 100 | 665 |
| | Doctorate only. . . . | - | - | - | - | 7 | 89 | 4 | . | 100 | 27 |
| Total, Five Fields | Terminal Master's . . | 18 | 41 | 10 | 1 | 6 | 13 | 7 | 3 | 99 | 1,380 |
| | Master's and Doctorate | 25 | 23 | 16 | 1 | 15 | 15 | 4 | 2 | 101 | 4,316 |
| | Doctorate only. . . . | 50 | 11 | 15 | 1 | 16 | 6 | 1 | 1 | 101 | 747 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 6,443 |
| NA Field or degree. . . . . | 371 |
| Total. . . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

them. Thus graduate biological science students frequently take their undergraduate training in the physical sciences and then move over to the biological sciences for the doctorate. Changes of fields of study seldom occur in the opposite direction, however.

Students going directly on for the doctorate generally maintained a graduate field that was the same or closely related to their undergraduate field of study, but they were more likely to switch schools to do so. Table 1.13 shows that with the sole exception of engineering students, those taking the direct B.A.-to-Ph.D. route left their undergraduate school more frequently than either terminal M.A. students or those expecting both the M.A. and Ph.D. Colleges and their faculties evidently advise their

TABLE 1.13

FIELD OF STUDY, DEGREE SOUGHT, AND INSTITUTIONAL MOBILITY

(Per Cent Moving from Their Undergraduate Institution)

| Field of Study | Degree Sought | | |
|---|---|---|---|
| | Terminal Master's | Master's and Doctorate | Doctorate Only |
| Physical science. . . . . . . . | 75 (304) | 79 (1,087) | 86 (349) |
| Engineering . . . . . . . . . . | 68 (552) | 66 (883) | 64 (62) |
| Life science. . . . . . . . . . | 60 (160) | 75 (786) | 82 (151) |
| Behavioral science. . . . . . . | 51 (136) | 77 (84) | 78 (154) |
| Humanities . . . . . . . . . . | 63 (217) | 77 (656) | 88 (25) |
| Total, five fields. . . . . | 66 (1,369) | 75 (4,233) | 82 (741) |

| | |
|---|---|
| N. . . . . . . . . . . . . | 6,343 |
| NA schools/degrees . . . | 471 |
| Total. . . . . . . . . . . | 6,814 |

undergraduates to go elsewhere for their graduate training, and a majority have taken this advice. However, the terminal M.A. candidates were less likely to do so than those who wanted both the M.A. and Ph.D. Fewer of the latter, in turn, switched schools than did those who wanted to go on directly for the Ph.D.[4]

Just as the student going directly for the Ph.D. stayed in the same field and left his undergraduate college for another graduate school more frequently than the students expecting only an M.A., or an M.A. and a Ph.D., so he more readily entered graduate school directly upon receipt of his B.A.

TABLE 1.14

FIELD OF STUDY, DEGREE SOUGHT, AND ELAPSED TIME BETWEEN RECEIPT OF BACHELOR'S AND INITIATION OF GRADUATE STUDY
(Per Cent)

| Field of Study | Degree Sought | Hiatus Between Bachelor's and Graduate Entrance | | | | Total | N |
|---|---|---|---|---|---|---|---|
| | | Less Than 1 Year | 1 Year | 2 Years | 3 Years or More | | |
| Physical science | Terminal Master's | 50 | 11 | 6 | 32 | 99 | 306 |
| | Master's and Doctorate | 69 | 8 | 7 | 15 | 99 | 1,099 |
| | Doctorate only | 80 | 5 | 3 | 11 | 99 | 350 |
| Engineering | Terminal Master's | 45 | 11 | 9 | 35 | 100 | 555 |
| | Master's and Doctorate | 63 | 10 | 9 | 16 | 98 | 898 |
| | Doctorate only | 72 | 5 | 6 | 16 | 99 | 62 |
| Life science | Terminal Master's | 43 | 9 | 8 | 38 | 98 | 159 |
| | Master's and Doctorate | 60 | 8 | 9 | 22 | 99 | 799 |
| | Doctorate only | 77 | 9 | 5 | 9 | 100 | 150 |
| Behavioral science | Terminal Master's | 42 | 10 | 12 | 36 | 100 | 137 |
| | Master's and Doctorate | 67 | 8 | 6 | 18 | 101 | 827 |
| | Doctorate only | 78 | 10 | 2 | 10 | 100 | 154 |
| Humanities | Terminal Master's | 49 | 15 | 8 | 27 | 99 | 219 |
| | Masters and Doctorate | 60 | 12 | 7 | 21 | 100 | 660 |
| | Doctorate only | 74 | 4 | 18 | 4 | 100 | 27 |
| Total, five fields | Terminal Master's | 46 | 11 | 10 | 34 | 101 | 1,376 |
| | Masters and Doctorate | 66 | 9 | 8 | 18 | 100 | 4,283 |
| | Doctorate only | 78 | 7 | 4 | 10 | 99 | 743 |

| | |
|---|---|
| N. . . . . . . . . . . . . . . . | 6,402 |
| NA, elapsed time/degree. . . . | 412 |
| Total. . . . . . . . . . . . . . | 6,814 |

[4]For data concerning transfer patterns among graduate schools, see Wilson (1965, p. 166). Further clarification of the pattern shown in Table 1.13 would be possible if data were on hand on the availability of a graduate school.

Table 1.14 shows that in all fields of study the group going on directly for the doctorate were least likely to defer graduate study: they had the highest percentage of those who allowed less than a year to elapse between the B.A. and entry into graduate school. Also, except for those in engineering, they were least likely to wait three years or more.

It is clear from the preceding that the students who anticipated going directly from their bachelors' to their doctorate are the ones who follow all academic rules in reaching for the "union card." They stay in the same field; they change schools after taking the bachelor's; they let as little time as possible elapse before starting graduate study.

TABLE 1.15

FIELD OF STUDY, DEGREE SOUGHT, AND EXPECTED DATE OF TERMINAL DEGREE

(Per Cent)

| Field of Study | Degree Sought | Expected Date of Completion | | | | | Total | N |
|---|---|---|---|---|---|---|---|---|
| | | 1963 | 1964 | 1965 | 1966 | 1967 and Up | | |
| Physical science | Terminal Master's | 26 | 38 | 18 | 8 | 9 | 99 | 286 |
| | Master's and Doctorate | 9 | 19 | 23 | 20 | 29 | 100 | 865 |
| | Doctorate only | 18 | 28 | 27 | 22 | 5 | 100 | 307 |
| Engineering | Terminal Master's | 25 | 33 | 19 | 14 | 9 | 100 | 491 |
| | Master's and Doctorate | 12 | 18 | 21 | 16 | 33 | 100 | 640 |
| | Doctorate only | 4 | 50 | 31 | 12 | 2 | 99 | 48 |
| Life science | Terminal Master's | 33 | 44 | 14 | 3 | 5 | 99 | 147 |
| | Master's and Doctorate | 12 | 21 | 21 | 16 | 29 | 99 | 584 |
| | Doctorate only | 13 | 26 | 29 | 27 | 6 | 101 | 134 |
| Behavioral science | Terminal Master's | 38 | 38 | 12 | 5 | 8 | 101 | 121 |
| | Master's and Doctorate | 12 | 22 | 25 | 19 | 21 | 99 | 682 |
| | Doctorate only | 10 | 25 | 35 | 18 | 12 | 100 | 146 |
| Humanities | Terminal Master's | 23 | 43 | 18 | 8 | 9 | 101 | 201 |
| | Master's and Doctorate | 6 | 14 | 22 | 22 | 35 | 99 | 556 |
| | Doctorate only | 4 | 17 | 50 | 29 | - | 100 | 24 |
| Total, five fields | Terminal Master's | 27 | 38 | 18 | 10 | 8 | 101 | 1,246 |
| | Master's and Doctorate | 12 | 20 | 21 | 18 | 29 | 100 | 2,329 |
| | Doctorate only | 4 | 28 | 30 | 22 | 6 | 100 | 659 |

| | |
|---|---|
| N . . . . . . . . . . . . . | 5,232 |
| NA degrees or dates . . . . | 704 |
| Aliens. . . . . . . . . . . | 878 |
| Total . . . . . . . . . . . | 6,814 |

Table 1.15 presents the date on which the terminal degree was anticipated. While the terminal M.A. students generally anticipated getting their degrees first, this was to be expected since these requirements are neither extensive nor time consuming. When students taking the master's en route to the Ph.D. are compared with those skipping the master's, however, those going directly for the doctorate are expected to get their degree sooner than those taking the B.A.-M.A.-Ph.D. route.

Comparing the percentage of each group expecting the degree in 1967 or later, between 21 and 33 per cent of the students planning on both the M.A. and the Ph.D. (depending on field of study) expected their degrees after 1966. On the other hand, 12 per cent or fewer of the students working for only a Ph.D. expected to wait this long to get their highest degree. It is clear that students going straight on for the Ph.D. were in a greater hurry for their highest degree than those who expected both the M.A. and Ph.D. Not only were they following the rules more closely, but they expected that this would pay them the dividend of getting their degrees faster.

Finally, as shown in Table 1.16, students going directly on for the doctorate without an intervening master's degree also spent more time at their academic study than did the other two groups. Generally, terminal master's students committed the least time to academic work in the spring of 1963. Students planning on both degrees were in the middle.

In summary, the great majority of graduate students in the five composite fields were enrolled for course work during the spring term, but less than a majority were involved in course work full time. A substantial minority of the engineering students were enrolled in a night school program or some other program that eliminated the possibility of full-time study. About one-half of these graduate students in the five composite fields said that they were giving forty hours or more to academic affairs, but students in the humanities and engineering were less likely than others to devote that much time to study. Almost 40 per cent of the students expected to receive their terminal degrees by the end of 1964. Furthermore, a great majority of all students expected to continue graduate studies up to the doctorate, although a significant minority of those in engineering and in the humanities anticipated their master's degrees as being terminal. Most students expected to acquire a master's degree along the way to their

TABLE 1.16

FIELD OF STUDY, DEGREE SOUGHT, AND AVERAGE NUMBER OF HOURS SPENT PER WEEK IN ACADEMIC STUDY

(Per Cent)

| Field of Study | Degree Sought | Average Number of Hours: Less Than 10 | 10-39 | 40 and Up | Total | N |
|---|---|---|---|---|---|---|
| Physical science | Terminal Master's | 26 | 48 | 26 | 100 | 308 |
| | Master's and Doctorate | 6 | 34 | 60 | 100 | 1,095 |
| | Doctorate only | 3 | 21 | 76 | 100 | 348 |
| Engineering | Terminal Master's | 27 | 50 | 23 | 100 | 545 |
| | Master's and Doctorate | 8 | 39 | 52 | 99 | 904 |
| | Doctorate only | - | 16 | 84 | 100 | 62 |
| Life science | Terminal Master's | 12 | 37 | 50 | 99 | 161 |
| | Master's and Doctorate | 2 | 31 | 67 | 100 | 799 |
| | Doctorate only | 1 | 18 | 81 | 100 | 152 |
| Behavioral science | Terminal Master's | 19 | 55 | 26 | 100 | 134 |
| | Master's and Doctorate | 6 | 39 | 55 | 100 | 828 |
| | Doctorate only | 4 | 25 | 71 | 100 | 154 |
| Humanities | Terminal Master's | 21 | 56 | 23 | 100 | 215 |
| | Master's and Doctorate | 10 | 40 | 50 | 100 | 664 |
| | Doctorate only | 4 | 15 | 81 | 100 | 27 |
| Total, five fields | Terminal Master's | 23 | 49 | 27 | 99 | 1,363 |
| | Master's and Doctorate | 6 | 36 | 57 | 99 | 4,290 |
| | Doctorate only | 2 | 21 | 77 | 100 | 743 |

| | |
|---|---|
| N. . . . . . . . | 6,396 |
| NA degree/hours. | 418 |
| Total. . . . . . | 6,814 |

doctorate, but those who did not were more likely to have continued in their undergraduate field of study and were expecting their doctorate at an earlier date than those who did.

Given th^se variations in academic circumstances, it is clear that a substantial number of graduate students were committing much of their time to nonacademic pursuits which centered primarily around employment. In the section that follows wc will document some of the conditions of graduate student employment during the academic year 1962-63.

Employment Characteristics, Spring, 1963

Conditions of employment, like academic programs of study, differed significantly from one to another of the five composite fields. Minimal involvement in academic study within any given field probably implied major commitments to employment beyond the academic pale, i.e., nonstipend employment. By nonstipend employment we mean any form of employment other than that required by virtue of holding a duty stipend, be it a research assistantship or a teaching assistantship, or the occasional job of only a few days' duration. Table 1.17 shows that over one-half of the sample (57 per cent) held nonstipend employment at some time during the academic year 1962-63. How much time was spent in this employment? In which fields? For what kind of employer? Involving what kind of work?

TABLE 1.17

NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Any Nonstipend Employment | Engineering | Humanities | Behavioral Science | Physical Science | Life Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Yes . . . . . . . . | 71 | 61 | 58 | 52 | 42 | 57 |
| No. . . . . . . . . | 29 | 39 | 42 | 48 | 58 | 43 |
| Total. . . . | 100 | 100 | 100 | 100 | 100 | 100 |
| N. . . . . . | 1,618 | 962 | 1,174 | 1,835 | 1,211 | 6,800 |
| NA . . . . . | 7 | 3 | - | 2 | 2 | 14 |
| Total N. . . | 1,625 | 965 | 1,174 | 1,837 | 1,213 | 6,814 |

As seen in Table 1.17, engineering students reported the highest rate of nonstipend employment of any group in the sample--seven out of ten were so employed. Similarly, six out of ten students in the humanities had such employment during the academic year 1962-63 in contrast to only four out of ten life science students. In fact, rates of nonstipend employment in these five composite fields of study had almost the same rank order as found in Table 1.7--the percentage of each field committing less than twenty hours weekly to academic study. Thus the less time allocated to study, the higher the rate of nonstipend employment in each field.

Two factors should be considered in describing the employment pattern: the number of hours of employment per week and the number of months of employment during the period under study. These aspects of employment were combined in Table 1.18: (1) students employed thirty-five hours or more per week were classified as working full-time; and (2) the duration of full-time employment was divided into (a) regular full-time employment (ten to twelve months during the period of June, 1963, through July, 1963); (b) sporadic full-time employment (four to nine months); and (c) occasional full-time employment (three months or less).

TABLE 1.18

EXTENT OF FULL-TIME NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Extent of Full Time Nonstipend Employment | Engineering | Physical Science | Humanities | Life Science | Behavioral Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Regular full-time: 10-12 months. . . | 54 | 36 | 36 | 29 | 29 | 40 |
| Sporadic full-time: 4-9 months. . . . | 10 | 11 | 15 | 13 | 12 | 11 |
| Occasional full-time: 3 months or less. . . . . . | 36 | 53 | 49 | 59 | 60 | 50 |
| Total. . . . . | 100 | 100 | 100 | 101 | 101 | 101 |
| N. . . . . . . | 1,134 | 943 | 577 | 503 | 676 | 3,833 |
| Not employed any months for 35 hrs. week . . . . | 475 | 879 | 379 | 706 | 489 | 2,928 |
| NA on employment . . . . | 16 | 15 | 9 | 4 | 9 | 53 |
| Total N . . . | 1,625 | 1,837 | 965 | 1,213 | 1 174 | 6,814 |

Among the students reporting nonstipend employment, about four in ten were employed full time during the twelve months under consideration. Thus a substantial minority of the total sample of students enrolled for graduate study (23 per cent) undertook study programs after a full day's work. When employed, one student out of ten worked from four to nine months on a full-time basis. One out of every two or those enrolled for graduate study in the spring of 1963, reporting some form of nonstipend employment, held a full-time job that was probably seasonal (i.e., required thirty-five hours or more weekly for three months or less during the twelve-month period). In the main, graduate students with full-time employment were on either a regular or a seasonal basis; very few moved in and out of full-time employment sporadically.

The highest proportion of students with regular full-time employment among those employed were found among engineering students: some 54 per cent were so employed as were over one-third (36 per cent) each in the physical sciences and the humanities, in contrast with 29 per cent in both the life and the behavioral sciences. Since there were no field differences in the incidence of sporadic full-time employment, fields of study that were low on rates of regular full-time employment were high on occasional employment, with behavioral science and life science students most frequently reporting this form of nonstipend employment.

In which fields were these graduate students employed? Considering the jobs held longest during the period under study, the field with the highest rate of nonstipend employment was engineering (33 per cent), followed by the physical sciences (18 per cent) (Table 1.19). There were substantial differences in the extent of concentration of employment in one's field of study. Some 91 per cent of the engineering students with nonstipend employment, followed by 65 per cent of the life science students, were working in their own fields of study. Two-thirds of the physical science students also held jobs in their own fields. The link between field of study and field of nonstipend employment was weaker in the behavioral sciences: only 57 per cent of these students were in behavioral science fields of employment. The most extensive movement beyond field of study occurred in the humanities, with fully seven out of ten students holding nonstipend employment in other fields.[5]

[5]Note that employment refers to the job held longest during the twelve-month period under study. Two-thirds of the sample were working at this longest-held job at the time they returned their completed questionnaires last spring or summer. Among those not at this job when completing the questionnaire, 178 were working at different jobs. It is our impression that the remainder were not working because they were preparing for or in the midst of term examinations at the time they received the mail questionnaire.

TABLE 1.19

FIELD OF NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF GRADUATE STUDY

| Field of Nonstipend Employment | Per Cent Having Employment | | | | | |
|---|---|---|---|---|---|---|
| | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
| Physical science. | 64 | 5 | 5 | 2 | 1 | 18 |
| Engineering . . . | 14 | 91 | 2 | 2 | 2 | 33 |
| Health . . . . . | 1 | * | 9 | 2 | 1 | 2 |
| Life science. . . | 4 | * | 65 | 4 | 3 | 10 |
| Education . . . . | 8 | * | 12 | 4 | 34 | 9 |
| Behavioral science | 2 | 1 | 3 | 57 | 8 | 11 |
| Humanities. . . . | 2 | 1 | 1 | 6 | 30 | 6 |
| Other . . . . . . | 5 | 2 | 4 | 24 | 22 | 10 |
| Total. . . . | 100 | 100 | 101 | 101 | 101 | 99 |
| N. . . . . . | 848 | 1,094 | 440 | 574 | 470 | 3,426 |
| No employment | 879 | 475 | 706 | 489 | 379 | 2,829 |
| NA . . . . . | 110 | 56 | 67 | 111 | 116 | 460 |
| Total N. . . | 1,837 | 1,625 | 1,213 | 1,174 | 965 | 6,814 |

*Less than one-half of 1 per cent.

The few engineering students who worked in nonengineering fields had jobs in the physical science fields (5 per cent). Physical science students reciprocated by taking jobs in engineering (14 per cent) and another 8 per cent of them held positions that they classified as "education." The greatest concentration of life science students with nonstipend employment outside their fields of study occurred in education (12 per cent taught natural science subjects), and, not surprisingly, 9 per cent found employment in related health fields. When behavioral science students found employment outside of behavioral science fields, it was most frequently in business or commerce.[6]

The distribution of students in the humanities by field of employment during 1962-63 was at variance with the other composite fields. First, only a minority classified their jobs as in the humanities (30 per cent) while 34 per cent gave education as their field of employment.[7] Because the composite field of humanities in this survey is comprised of history and English, the bulk of these students probably secured teaching positions at the secondary level in these subjects. In sum, the five composite fields of study differed in the extent to which field of employment corresponded with field of study and in the pattern of employment by field when the job was secured in a different field.

Who were the employers of graduate students in these fields? Table 1.20 shows that the most frequently mentioned employer was a "private company": one out of three (35 per cent) worked for this type of employer and another one out of five secured nonstipend employment at the "college or university at which I am enrolled." Research organizations and the Federal government each employed another one out of ten graduate students, and 8 per cent held jobs in elementary or secondary schools or school systems. Table 1.20 shows that engineering students especially worked for private employers, the

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[6]Inspection of their allocation by detailed field (not shown) revealed that fully 13 per cent were in advertising, marketing, business administration, industrial relations, and the like. If combined, fully 24 per cent of the employed were in "business and other" fields of employment. The remainder were distributed widely among various fields of employment.

[7]Employment in the field of education is compatible, needless to say, with graduate study in history and English.

pattern among physical science students was close to the overall distribution, life science students with nonstipend employment were frequently in academic settings, the behavioral science pattern was more closely allied to that in the life sciences than to that in engineering or physical sciences, and humanities students were in three cases out of ten in secondary teaching. A more detailed inspection of this table shows close connections between the field of study and the context for nonstipend employment, just as there were links between field of study and other academic and employment characteristics.

Because of their advanced level of educational attainment and life cycle position (the median age of the graduate students in this sample is 26.5 and a majority are married), it is clear that there are economic pressures that induce them to secure employment while in the midst of their formal programs of study. In addition, many have long-term career commitments that impel them to get practical experience in their anticipated career field while in graduate school. To learn something about the fit between their nonstipend employment and the expected career field, respondents were asked whether:

This is.....(circle one) The kind of job I wanted in my anticipated career field.

A job which is relevant to my anticipated career field but not the kind I want.

A job that has nothing to do with my anticipated career field.

As shown in Table 1.21, roughly four students out of ten among those with nonstipend employment had secured desirable jobs in their anticipated career fields, and an equal number had employment in their anticipated career fields although not the kind they preferred. For one student out of five, field of employment was entirely unrelated to his anticipated career field. This was true of 40 per cent of the students in the humanities but of only 6 per cent of those in engineering. Not only did nine out of ten engineering students hold career-relevant employment last year, but over one-half also found "the kind of job I want."

The experience in the physical and life sciences conformed to the overall pattern, but the employed behavioral science students were least likely (27 per cent) to have had a job of the kind they wanted in their

TABLE 1.20

NONSTIPEND EMPLOYER AND COMPOSITE
FIELD OF GRADUATE STUDY

(Per Cent)

| Field of Employment | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
|---|---|---|---|---|---|---|
| Self-employed . . | 2 | 1 | 2 | 4 | 5 | 3 |
| Private company . | 39 | 59 | 13 | 19 | 17 | 35 |
| Professional partnership . . | 1 | 1 | * | 1 | 2 | 1 |
| Research organization/institute. | 14 | 12 | 11 | 8 | 3 | 10 |
| College or university at which enrolled. . . . | 17 | 17 | 32 | 20 | 17 | 19 |
| Another college or university. . . | 8 | 3 | 9 | 11 | 8 | 7 |
| Junior college or technical institute . . . | 1 | 1 | 1 | 1 | 2 | 1 |
| Elementary or secondary school or school system | 7 | * | 11 | 4 | 30 | 8 |
| Hospital, clinic, church, welfare, or other non-profit organization. . . . . | 2 | * | 10 | 17 | 7 | 6 |
| Federal government. . . . . . | 11 | 9 | 11 | 10 | 6 | 10 |
| State or local government. . . | 3 | 3 | 6 | 7 | 4 | 4 |
| Other . . . . . . | 3 | 2 | 3 | 9 | 6 | 4 |
| Total. . . . | 108[a] | 108 | 109 | 111 | 107 | 108 |
| N. . . . . . | 942 | 1,134 | 499 | 675 | 574 | 3,824 |
| NA . . . . . . | 895 | 491 | 714 | 499 | 391 | 2,990 |
| Total N. . . | 1,837 | 1,625 | 1,213 | 1,174 | 965 | 6,814 |

[a]Totals to more than 100 per cent due to multiple responses.

TABLE 1.21

TYPE OF JOB AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Type of Job | Engineering | Physical Science | Life Science | Humanities | Behavioral Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| "The kind I want in my anticipated career field". . . . . | 52 | 44 | 37 | 31 | 27 | 41 |
| "Relevant to my anticipated career, but not the kind I want" . . . . | 42 | 36 | 41 | 29 | 45 | 39 |
| "Has nothing to do with my anticipated career" . . . . | 6 | 20 | 21 | 40 | 28 | 20 |
| Total. . . . | 100 | 100 | 99 | 100 | 100 | 100 |
| N. . . . . . | 1,120 | 923 | 485 | 560 | 669 | 3,757 |
| NA, no employment | 505 | 914 | 728 | 405 | 505 | 3,057 |
| Total N. . . | 1,625 | 1,837 | 1,213 | 965 | 1,174 | 6,814 |

long-term careers. However, they were far more likely than students in the humanities to have held employment relevant for their career fields even if it was not exactly what they wanted. Earlier we showed that engineering students were most likely to hold full-time regular employment. Now, it is evident that the engineering graduate students were most likely to have integrated work and careers. We will see that this employment pattern has implications for policy formation concerning stipend support for graduate education.

Aslo, consider the information provided by these students concerning their monthly earnings before taxes from the highest paid regular job of at least six months' duration. Whether or not they were employed at this highest paid regular full-time job at the time of the survey, composite field differences in the peak earnings of these graduate students are probably an important indicator of the field's capacity to induce students to commit their time to full-time study. The man who earned more than $10,000 annually is not too likely to enter full-time study with a fellowship providing $2,000 and tuition.

Table 1.22 shows that 16 per cent of the sample reported this type of employment and had peak earnings of less than $400 monthly before taxes. Almost one out of four (23 per cent) had peak monthly earnings of $400 to $599. Nearly three out of ten (28 per cent) were earning at least $600 monthly before taxes, resulting in a salary rate from their major employment of no less than $7,200 annually. Among the roughly three out of ten students in the sample who were at this level of earnings in their highest paid regular full-time employment, one-sixth were earning from $600 to $799 monthly, and some 11 per cent were paid from $800 to over $1,000 monthly. In fine, for a substantial minority of graduate students in the sciences, engineering, and two of the humanities, the salary profile describing full-time employment ever held of more than six months' duration hardly promotes the image of struggling, impoverished scholars living from hand to mouth.

Field differences in peak earnings were varied: 26 per cent of the engineering students attained peak earnings of $800 per month or more as did 12 per cent of the physical science students compared with 5 per cent in the behavioral sciences, 3 per cent in the humanities, and 3 per cent in the life sciences. The opposite was true in the rank ordering of the fields in the percentage earning under $400 monthly. Thus engineering stood head and shoulders above the other fields in the peak earnings of students who ever had stable, full-time employment.

In addition, there were indications that the engineering students were holding the jobs yielding peak earnings more frequently than were students in other fields. Table 1.23 shows that some 71 per cent of the engineering students ever having had regular full-time jobs of more than six months' duration were in those jobs and at their peak earnings while enrolled for graduate study at the time of the survey. About one-half (51 per cent) of the physical science students were similarly situated as were 45 per cent of those in the humanities, but only 35 per cent of those in the life and behavioral sciences. <u>In toto</u>, one-half of those graduate students reporting full-time regular employment in a job of more than six months' duration were enjoying their best job.

TABLE 1.22

MONTHLY INCOME FROM HIGHEST PAID REGULAR JOB AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Monthly Income | Engineer-ing | Physical Science | Behavioral Science | Human-ities | Life Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| $800 or more. . . | 26 | 12 | 5 | 3 | 3 | 11 |
| $600-$799 . . . . | 30 | 20 | 12 | 9 | 9 | 17 |
| $400-$599 . . . . | 13 | 22 | 23 | 30 | 28 | 23 |
| Less than $400. . | 8 | 14 | 21 | 23 | 21 | 16 |
| Never held regular job . . | 23 | 33 | 39 | 35 | 40 | 33 |
| Total . . . | 100 | 101 | 100 | 100 | 101 | 100 |
| N. . . . . . . | 1,387 | 1,307 | 1,112 | 933 | 1,067 | 5,806 |
| NA, monthly income on job. . . . | 230 | 530 | 62 | 32 | 146 | 1,008 |
| Total N. . . | 1,625 | 1,837 | 1,174 | 965 | 1,213 | 6,814 |

TABLE 1.23

FIELD OF HIGHEST PAID REGULAR FULL-TIME JOB AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent)

| Highest Paid Regular Full-Time Job | Engineer-ing | Physical Science | Human-ities | Life Science | Behavioral Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Job now holding . | 71 | 51 | 45 | 35 | 35 | 50 |
| Current field, but different job . . . . . . | 12 | 14 | 10 | 16 | 12 | 13 |
| Not in current field . . . . . | 6 | 18 | 21 | 25 | 32 | 19 |
| None of the above . . . . . | 11 | 17 | 25 | 24 | 21 | 19 |
| Total. . . . | 100 | 100 | 101 | 100 | 100 | 101 |
| N. . . . . . . | 1,089 | 883 | 620 | 656 | 686 | 3,934 |
| NA, no job . | 536 | 954 | 345 | 557 | 488 | 2,880 |
| Total N. . . | 1,625 | 1,837 | 965 | 1,213 | 1,174 | 6,814 |

A majority of American graduate students enrolled for study in the sciences, engineering, and the humanities reported some form of nonstipend employment during the academic year 1962-63, but the chances of doing so varied extensively by field of study. Among the engineering students so employed more than one-half worked at their jobs on a full-time regular basis, but this was least likely to occur among life and behavioral science students. Field of employment typically coincided with field of study. Employed engineering students were most likely to be at jobs relevant to their courses and yielding peak earnings.

## Summary

This chapter presented some of the academic and employment characteristics of graduate students enrolled in graduate programs in five composite fields of study in spring, 1963. On the whole these students have experienced institutional mobility, continuity in fields of study, and relatively uninterrupted study in the transition from college to graduate school. The great majority were enrolled for course work in the term under study; about one-half the students reported working at least forty hours a week on academic pursuits. Almost one-half expected to receive their terminal degree by the end of 1964, and a great majority expected that this would be the doctorate. A little more than 10 per cent expected to receive the doctorate without first taking a master's degree. Students taking the B.A.-Ph.D. route reported longer hours of work, less delay in starting, and greater commitment to their field than the students taking a master's degree before the doctorate.

A majority of the students reported some nonstipend employment, but there were extensive differences in employment by field of study. Employment typically coincided with the field of study. Engineering students reported regular full-time work most frequently; life science students least often.

Whether students received stipends in the form of scholarships, fellowships, teaching assistantships, or research assistantships last year, whether field of study affected their chances of securing stipend support, and how stipend holding related to some of the employment and academic characteristics described above are topics to be considered in Chapter 2.

## CHAPTER 2

## STIPEND HOLDING IN AMERICAN GRADUATE SCHOOLS

Growing enrollment in higher education and expanding professional manpower needs in educational institutions and industrial enterprises have given rise to a number of questions about the character of financial support for graduate education, particularly in the sciences and engineering. The first question concerns the extent, types, and sources of stipend support currently available for graduate study. In his 1958 survey of traditional arts and science graduate fields, Davis (1962, Chapter 6) found that two-thirds of the students received some sort of stipend, that stipends were the most important source of income available to graduate students when measured in terms of total dollars, and that the distribution of stipends was primarily determined by state of training type of school, and division of study. Have any changes occurred in the intervening five years in the pattern of stipend support? Were talented students in the behavioral sciences and the humanities, for example, still far less likely to receive support than their counterparts in the natural sciences?

Another question concerns the students enrolled in engineering studies. How did they compare with students in other fields? A detailed financial picture was provided in Davis' 1958 survey for the arts and sciences, but engineering has not had similar coverage to date. Furthermore, it is uncertain whether the pattern of support would be different if foreign nationals were excluded from analysis of the data, because they comprise a substantial minority of students in some fields enrolled for graduate study in American schools.[1] The tabular materials to be presented in this chapter and the ones that follow are limited to American citizens attending graduate school in the spring term of 1963. Support for foreign students undertaking advanced academic study in American universities may be a topic deserving additional study, but the population in focus consists of the seventeen students out of every twenty in these five composite fields of study who are American citizens.

## Extent of Stipend Holding

A majority of the American graduate students enrolled for advanced study in the five composite fields were recipients of some form of stipend support during the academic year 1962-63.[2] Sixty-six per cent held at least one stipend, but there were substantial differences in the extent of stipend holding depending on the composite field of study (Table 2.1). The life sciences ranked highest, with four out of five students receiving this form of support, followed by physical sciences (three out of four), behavioral sciences (two out of three), engineering (six out of ten), and the humanities (less than one out of two). Clearly, field of study was a critical determinant of stipend support. The mere fact that a student had elected to take graduate work in the life sciences and enrolled for study in this field almost guaranteed him some form of stipend support, while the student in history or English, by the same token, cut his chances in half by committing himself to either of these fields.

Students were not necessarily restricted to one stipend during the academic year: some 19 per cent of the sample held a second stipend

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[1] Our data show that some 18 per cent of the students in the composite field of engineering in the spring of 1963 were foreign nationals, as were 17 per cent of those in the life sciences, 12 per cent in the physical sciences and 10 per cent in the behavioral sciences. In contrast, foreign nationals comprised only 3 per cent of the students in the two humanities fields of history and English.

[2] See Question 29 of the questionnaire in Appendix 4 for definitions and instructions to the respondent.

during the twelve-month period and another 3 per cent were holding a third. Thus one out of four students in the physical sciences held a second stipend, as did one out of five in the life and behavioral science fields, but only one out of eight in engineering and one out of nine in the humanities.

TABLE 2.1

STIPEND HOLDING IN FIVE COMPOSITE FIELDS OF GRADUATE STUDY
(Per Cent)

| Field of Graduate Study | First Stipend | Second Stipend | Third Stipend | N |
|---|---|---|---|---|
| Life Science . . . . | 80 | 20 | 4 | 1,004 |
| Physical science. . . | 74 | 24 | 5 | 1,614 |
| Behavioral science. . | 63 | 20 | 4 | 1,055 |
| Engineering . . . . . | 61 | 16 | 3 | 1,325 |
| Humanities. . . . . . | 46 | 11 | 2 | 931 |
| Total, all fields | 66 | 19 | 3 | 5,929 |

| | |
|---|---|
| N . . . . . . . . . . . . . . . | 5,929 |
| NA, stipend . . . . . . . . . | 7 |
| Aliens. . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

## Types of Stipends

The stipends available to students in higher education can be roughly divided into two groups: nonduty stipends are those requiring no services from the recipient; a nonduty stipend with a value equal to or less than the amount of a student's tuition and fees is defined as a scholarship, while a nonduty stipend of an amount covering tuition plus a cash grant is a fellowship. Duty stipends are chiefly teaching assistantships (TA) and research assistantships (RA). What types of stipends did the students in the five composite fields of study hold in 1962-63? When more than one stipend was obtained, what was the pattern of stipend holding?

Table 2.2 presents a number of findings in condensed form for the entire sample of students, i.e., all fields combined:[3]

1. Some 15 per cent of the sample received nonduty stipend in the form of scholarships equal to or less than tuition. One out of five students (21 per cent) had a nonduty stipend, a fellowship covering tuition plus a cash grant. Another one out of five (20 per cent) of the students received a duty stipend in the form of a research assistantship, and about the same proportion (22 per cent) held teaching assistantships.

2. Slightly under one-half (48 per cent) held single stipends of the following types: scholarships (9 per cent); fellowships (13 per cent); research assistantships (13 per cent); and teaching assistantships (13 per cent).

3. About 19 per cent of the sample were recipients of two or more stipends. The scholarship, the RA, and the TA were the most frequently held second stipends (each type was held by 5 per cent of the sample), while another 4 per cent had fellowships.

4. If the student held a second stipend, the chances were less than one-half that the second stipend would be of the same type as the first one: 19 per cent held a second, but only 7 per cent had second stipends that were of exactly the same type as the first. If, however, we contrast duty with nonduty stipends, then 11 per cent held second stipends that

[3]The reader is cautioned that the discussion on the pattern of stipend holding refers to the sample of five composite fields. These students represent slightly less than one-half of the total graduate student population; accordingly these relationships do not indicate the prevailing pattern among all American graduate students.

were of the same type as the first, i.e., nearly two out of three second stipends were similar in type to the first one.

Specifically:

a) If the first (and, by definition, highest value) stipend was a scholarship, then the second also consisted of a scholarship and the remaining types of stipends were virtually absent;

b) When the first stipend was a fellowship, however, the second stipend was fairly evenly distributed among the four types;

c) If the RA was the first stipend, then the student was not at all likely to hold a fellowship and hardly ever held another RA or a TA or a scholarship; and

d) If the TA was the stipend with the highest value, then again the occasional second stipend was almost uniformly distributed among all four types.

## Field Differences in Types of Stipends Held

Table 2.3 shows that there are substantial differences in the types of stipends students were likely to hold, depending on their composite field of study.

Scholarships--Close to one out of four engineering students held stipends covering all or part of their tuition bills. This form of support was less frequently available in the other fields of study: in each of them roughly one out of ten held scholarships.

Fellowships--The life sciences outstripped the other fields in gaining this form of stipend support: about three out of ten students received grant in excess of the entire tuition. Next in line were the behavioral sciences, where one out of four (24 per cent) held a fellowship during the year under study. Humanities ranked at the bottom in this form of stipend support, 13 per cent of the sample in this field receiving fellowships.

TABLE 2.2

TYPE OF FIRST STIPEND BY TYPE OF SECOND STIPEND HELD BY AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY

| Type of First Stipend | Type of Second Stipend | | | | | Total, Five Fields | |
|---|---|---|---|---|---|---|---|
| | None | Scholarship | Fellowship | RA | TA | First | First and Second |
| Scholarship . . . . | 9 | 2 | * | * | * | 11 | 15 |
| Fellowship . . . | 13 | 1 | 2 | 1 | 2 | 19 | 21 |
| RA . . . . . . . . | 13 | 1 | * | 2 | 1 | 17 | 20 |
| TA . . . . . . . . | 13 | 1 | 1 | 2 | 1 | 18 | 22 |
| Total, second stipend . | 48[a] | 5 | 4 | 5 | 5 | 66 | |
| No stipend . . . | | | | | | 34 | |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . . | 5,929 |
| NA, stipend holding . . . . . . . | 7 |
| Aliens . . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

[a]Because of rounding errors, percentages do not always add to the figure shown in total. Totals are recalculated on basis of N's. This applies hereafter.

TABLE 2.3

COMPOSITE FIELD OF GRADUATE STUDY AND TYPE OF STIPEND HELD

(Per Cent Holding as Either First or Second Stipend)

| Field | Type of Stipend | | | | N | NA on First and/or Second | Total |
|---|---|---|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA | | | |
| Life science. . . . | 9 | 29 | 31 | 23 | 975 | 29 | 1,004 |
| Physical science. . | 14 | 21 | 24 | 32 | 1,590 | 24 | 1,614 |
| Behavioral science. | 11 | 24 | 24 | 17 | 1,033 | 22 | 1,055 |
| Engineering . . . . | 24 | 17 | 17 | 13 | 1,299 | 26 | 1,325 |
| Humanities. . . . . | 13 | 13 | 4 | 21 | 909 | 22 | 931 |
| Total. . . . . | 15 | 21 | 20 | 22 | 5,806 | 123 | 5,929 |

| | |
|---|---|
| N . . . . . . . . . . . . . . . | 5,929 |
| NA, stipend holding. . . . . . | 7 |
| Aliens . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

Research assistantships--As shown above, the life sciences ranked at the top in the proportion holding fellowships. This field also overshadowed the others in securing duty stipends entailing research duties. About one-fourth of the students in both the physical and behavioral sciences held RA's as did 17 per cent of the engineering students. This form of support rarely flowed into the humanities: here only 4 per cent held an RA.

Teaching assistantships--Physical science students held the most stipends requiring teaching duties, close to one in three (32 per cent) held a TA. Humanities students, for a change, received their "expected" share of these stipends on the basis of the total sample distribution (21 per cent), while only 17 per cent of the students in the behavioral sciences and 13 per cent in engineering held TA's in the academic year 1962-63.

Thus the dominant form of support varied by field, ranging from scholarships in engineering to TA's in the physical sciences and the humanities.[4] In sum, in the life sciences stipend support was likely to be fellowships and RA's. Engineers were underrepresented in holding every type of stipend save scholarships, as noted above. Behavioral science was low on scholarships and TA's but made up for this in fellowships and RA's. Humanities ranked relatively low on all forms of support except for TA's.

## Sources of Stipend Support

Students were asked to identify not only the type of stipend secured, but also the granting agency. The precoded format included nine agencies or special agency programs within the United States Federal government and seven other non-Federal donors such as private foundations, industrial or business firms, state or local governments, the graduate school the student was attending, and the like. A category "the school

[4] Table 2.4a contains more detailed information on types of first and second stipends held in each of the five fields.

TABLE 2.4

TYPE OF FIRST STIPEND BY TYPE OF SECOND STIPEND (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY)

| Type of First Stipend | Type of Second Stipend | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | No Second Stipend | Scholarship | Fellowship | RA | TA | First | First and Second |
| | **a) Per Cent in Physical Science** | | | | | | |
| Scholarship. . . . | 7 | 1 | - | * | * | 9 | 14 |
| Fellowship . . . . | 11 | 1 | 2 | 1 | 3 | 19 | 21 |
| RA . . . . . . . . . | 14 | 1 | 1 | 2 | 2 | 19 | 24 |
| TA . . . . . . . . . | 18 | 2 | 2 | 3 | 2 | 27 | 32 |
| Total, second stipend. . . | 50 | 6 | 5 | 6 | 7 | 74 | |
| No stipend . . | 26 | | | | | | |
| | NA on first and/or second . . | | | | | 24 | |
| | N . . . . . . . . . . . . . . . . | | | | | 1,590 | |
| | Total . . . . . . . . . . . . | | | | | 1,614 | |
| | **b) Per Cent in Engineering** | | | | | | |
| Scholarship. . . . | 17 | 3 | - | * | * | 21 | 24 |
| Fellowship . . . . | 11 | 1 | 1 | 2 | 2 | 16 | 17 |
| RA . . . . . . . . . | 10 | 2 | 1 | 1 | 1 | 14 | 17 |
| TA . . . . . . . . . | 8 | 1 | * | 1 | 1 | 10 | 13 |
| Total, second stipend. . . | 46 | 7 | 2 | 4 | 3 | 61 | |
| No stipend . . | 39 | | | | | | |
| | NA on first and/or second . . | | | | | 26 | |
| | N . . . . . . . . . . . . . . . . | | | | | 1,299 | |
| | Total N . . . . . . . . . . . | | | | | 1,325 | |
| | **c) Per Cent in Life Science** | | | | | | |
| Scholarship. . . . | 5 | 1 | * | * | - | 7 | 9 |
| Fellowship . . . . | 20 | 1 | 2 | 1 | 2 | 27 | 29 |
| RA . . . . . . . . . | 22 | 1 | 1 | 2 | 2 | 28 | 31 |
| TA . . . . . . . . . | 14 | 1 | 1 | 2 | 1 | 19 | 23 |
| Total, second stipend. . . | 61 | 4 | 5 | 5 | 5 | 80 | |
| No stipend . . | 80 | | | | | | |
| | NA on first and/or second . . | | | | | 29 | |
| | N . . . . . . . . . . . . . . . . | | | | | 975 | |
| | Total N . . . . . . . . . . . | | | | | 1,004 | |

TABLE 2.4--Continued

| Type of First Stipend | Type of Second Stipend | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | No Second stipend | Scholar-ship | Fellow-ship | RA | TA | First | First and Second |
| | d) Per Cent in Behavioral Science | | | | | | |
| Scholarship. . . | 5 | 1 | - | * | * | 6 | 11 |
| Fellowship . . . | 16 | 1 | 2 | 2 | 1 | 22 | 24 |
| RA . . . . . . . | 14 | 2 | 1 | 3 | 1 | 21 | 24 |
| TA . . . . . . . | 9 | 1 | 1 | 2 | 1 | 15 | 17 |
| Total, second stipend. . | 44 | 5 | 3 | 7 | 4 | 63 | |
| No stipend . | 37 | | | | | | |
| | NA on first and/or second . . 22 | | | | | | |
| | N . . . . . . . . . . . . . . . 1,033 | | | | | | |
| | Total N . . . . . . . . . . . 1,055 | | | | | | |
| | e) Per Cent in Humanities | | | | | | |
| Scholarship. . . | 9 | 1 | * | - | * | 11 | 13 |
| Fellowship . . . | 8 | 1 | 1 | - | 2 | 12 | 13 |
| RA . . . . . . . | 3 | * | * | * | - | 4 | 4 |
| TA . . . . . . . | 15 | 1 | 1 | * | 2 | 20 | 21 |
| Total, second stipend. . | 36 | 4 | 2 | 1 | 3 | 46 | |
| No stipend . | 54 | | | | | | |
| | NA on first and/or second . . 22 | | | | | | |
| | N . . . . . . . . . . . . . . . 909 | | | | | | |
| | Total N . . . . . . . . . . . 931 | | | | | | |

NOTE: Excluded from the above are the third stipends of triple stipend holders. These are distributed as follows: (N's are reported):

| Composite Field of Graduate Study | Type of Third Stipend (Per Cent) | | | | |
|---|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA | NA |
| Physical science . . | 16 | 11 | 24 | 15 | 9 |
| Engineering. . . . . | 22 | 5 | 2 | 6 | 5 |
| Life science . . . . | 9 | 7 | 13 | 4 | 2 |
| Behavioral science . | 8 | 7 | 11 | 10 | 5 |
| Humanities . . . . . | 5 | 5 | 5 | 2 | 4 |
| | N in five composite fields 5,929 | | | | |
| | NA, stipend holding . . . 7 | | | | |
| | Aliens. . . . . . . . . . . 878 | | | | |
| | Grand Total N . . . . . 6,814 | | | | |

*Less than one-half of 1 per cent.

I am attending, but I do not know the primary source" was included because sometimes the university administers funds from another source that the recipient of the stipend is unable to identify.[5]

Source of First Stipend

A detailed breakdown of sources for the first stipend (i.e., the one with the highest value) by field and donor is presented in Table 2.5. Two-thirds of those holding stipends secured their support from a source other than the Federal government and the remainder held stipends that they knew to come from a Federal agency. While the current public debate on the role of the Federal government in higher education fosters the impression that stipends flow largely from Federal coffers, then data show that stipends for graduate training in these five composite fields more frequently come from a variety of non-Federal sources than from Federal agencies.[6]

The Federal government was prominently identified with providing graduate student support in some fields, but not in others. Close to one-half of the students in the life sciences (46 per cent) held first stipends that came from Federal agencies, as did about four out of ten (39 per cent) of those in the behavioral sciences, one out of three (37 per cent) in the physical sciences, three out of ten (29 per cent) in engineering, and only one out of ten in the humanities.

The most prominent source appears to be "the school I am attending"--more than one out of three (38 per cent) recipients in the sample

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[5]The reader will bear in mind that data presented here refer to the composite field only. Substantial differences in sources of support could occur at the detailed field level (see Appendix 3).

[6]The same point is made if the entire sample is substituted for the stipend recipients in calculating these percentages: nearly one out of four (23 per cent) of the sample held a first stipend from a Federal source; over four out of ten (43 per cent) received their first stipend from a non-Federal agency; the remainder received no support during the time period under study.

TABLE 2.5

SOURCE OF FIRST STIPEND AND COMPOSITE FIELD OF GRADUATE STUDY

(Per Cent of Stipend Holders)

| Donor of Stipend | Composite Field of Graduate Study | | | | | |
|---|---|---|---|---|---|---|
| | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
| Atomic Energy Commission | 7 | 3 | 1 | - | - | 3 |
| Department of Defense | 4 | 6 | 1 | 2 | 1 | 3 |
| National Science Foundation | 15 | 7 | 16 | 5 | - | 10 |
| Veterans Administration (excluding G.I. Bill) | * | * | - | 2 | - | * |
| National Aeronautics and Space Administration | 1 | 3 | * | * | - | 1 |
| Office of Education | | | | | | |
| National Defense Education Act | 3 | 2 | 3 | 6 | 8 | 4 |
| Other Office of Education | - | * | - | 1 | - | * |
| Public Health Service | | | | | | |
| National Institutes of Health Fellowship Program | 1 | * | 6 | 9 | * | 3 |
| NIH Training Grant and Traineeship Program | 1 | 1 | 14 | 7 | - | 4 |
| Other public health service | 1 | 1 | 3 | 4 | - | 2 |
| Other Federal government | 3 | 4 | 2 | 4 | 1 | 3 |
| Total U. S. government | 37[a] | 29 | 46 | 39 | 10 | 34 |
| Private foundation, philanthropic organizations, etc. | 3 | 4 | 2 | 5 | 9 | 4 |
| Industrial or business corporation or firm | 10 | 32 | 2 | 2 | 1 | 11 |
| Directly from the school I am now attending | 40 | 27 | 32 | 39 | 62 | 38 |
| The school I am attending, but I do not know the primary source | 7 | 5 | 10 | 7 | 6 | 7 |
| State or local government (U.S.) | 3 | 2 | 6 | 6 | 10 | 5 |
| Foreign government or other foreign source | * | - | - | - | - | * |
| Other | 1 | 1 | 1 | 2 | 3 | 1 |
| Total non-U.S. government | 63 | 71 | 54 | 61 | 90 | 65 |
| Total | 100 | 98 | 99 | 101 | 101 | 99 |
| N | 1,184 | 801 | 790 | 661 | 424 | 3,860 |
| NA, source | 15 | 18 | 19 | 13 | 16 | 81 |
| No stipend | 415 | 506 | 195 | 381 | 491 | 1,988 |
| Total | 1,614 | 1,325 | 1,004 | 1,055 | 931 | 5,929 |

| | |
|---|---|
| N | 5,929 |
| NA, stipend | 7 |
| Aliens | 878 |
| Total | 6,815 |

[a]Where percentages do not add to subtotals, the subtotals were calculated on the basis of N to eliminate rounding errors.

*Less than one-half of 1 per cent.

gave this as their donor, and another 7 per cent received a stipend through their schools from an unknown source. Putting the two together, we see that close to seven out of ten (68 per cent) of the humanities recipients were supported through their schools, as were close to one-half (47 per cent) of the stipend holders in the physical sciences; this was also the case for over four out of ten in each of the life and behavioral science fields and about one out of three in engineering.

Another striking finding consists of the following: one out of ten students secured stipends through "an industrial or business firm or corporation," and these stipends mostly flowed into engineering. About one-third of the recipients in this field held stipends from this source (probably their employers), as did one-tenth of those in the physical sciences. Support from this source was rare in other fields. Another 4 per cent of the first stipend holders in the sample secured their support from private foundations or philanthropic organizations and 5 per cent reported that state or local government agencies provided some form of assistance.

Among the Federal agencies, one of the two most frequently mentioned as the stipend source was the National Science Foundation (NSF): one in ten stipend holders got support from NSF in 1962-63. Fields varied considerably in their reliance on this agency for support: About 15 per cent in each of the physical and life science fields held stipends from NSF in contrast with 7 per cent of the recipients in engineering and 5 per cent of those in behavioral sciences.

The second major donor of stipends among the Federal agencies is the Public Health Service (PHS): 9 per cent of the holders of at least one stipend in the sample secured their stipends through one of the PHS programs. Specifically, 4 per cent mentioned a National Institutes of Health Training Grant and Traineeship Program, while another 3 per cent mention the NIH Fellowship Program. The life sciences, especially, relied on this source. Some 14 per cent in the life sciences mentioned the NIH Training Grant and Traineeship Program and 23 per cent mentioned its parent organization, PHS (including NIH). Twenty per cent of the behavioral sciences recipients indicated PHS as the donor of a stipend, with 9 per cent specifically mentioning a fellowship from NIH. A far smaller proportion of those in the physical sciences (3 per cent) secured support from PHS, as did 2 per cent of the stipend holders in engineering.

The Office of Education was mentioned by 4 per cent of the sample, mainly with reference to the National Defense Education Act (NDEA).[7] About 8 per cent in the humanities mentioned the NDEA. Indeed, the humanities' major patron in the Federal government consisted of this program administered by the Office of Education. An Office of Education stipend was also mentioned by 7 per cent of the behavioral sciences sample, 3 per cent in each of the physical and life sciences, and 2 per cent of the recipients in engineering.

Some 3 per cent of the sample identified the Department of Defense as their benefactor. Support from this source evidently was directed at the physical science field and engineering: some 4 per cent in the former and 6 per cent in the latter mentioned this source, and most are probably full-time career military officers or RA's on contracts secured from this agency. The Atomic Energy Commission (AEC) also provided stipend support for graduate study in the physical sciences and engineering: 7 per cent of the students in the physical sciences and 3 per cent of those in engineering were enrolled for graduate study through support with stipends from the AEC.

It was too early for stipend support for graduate education in the sciences and engineering in 1963 to be one of the benefits from the race to the moon that is being conducted under the auspices of the National Aeronautics and Space Administration (NASA). One recipient in one hundred secured a stipend for study last year from NASA. Among the engineering students, about 3 per cent held NASA stipends, as did 1 per cent of the physical science students.

While the Veterans Administration (VA) has been prominently identified with support for education since World War II, there are no stipends in these five composite fields currently coming from this agency. Since

---

[7]The fields of study typically supported by the Office of Education programs are not included in this study. These include the languages, various fields of education, etc. The numbers of students supported by various Federal agencies is presented in U.S. Congress, House (1963, pp. 17-28).

respondents were instructed to exclude the GI Bill from VA stipend giving, a number of the graduate students currently studying under the GI Bill may have circled "other Federal government." Nevertheless, only 3 per cent of the stipend holders mentioned this nonspecific Federal source. Support for graduate education in the five fields of study from the VA, with or without the GI Bill, has faded away.

First Stipend: Field, Source, and Type

Having sketched the pattern of stipend holding in the composite fields of study first according to the distribution of various types of stipends among the sample, and then by source of the first stipend held, we can ask the following questions: were the stipends in the physical sciences primarily fellowships from government agencies and TA's from universities, or were there different stipend arrangements in this and other fields of graduate study?

Inspection of the five panels in Table 2.6 reveals that the fields differed in the extent to which concentration of kinds--i.e., source types--of stipends prevailed. Both the humanities and the physical sciences, for example, showed a specific form of concentration among the stipend holders: in each over one-third of the recipients held TA's from the university in which they were enrolled. In the behavioral sciences the same kind of stipend arrangement was reported by one-fifth of the recipients.

Specifically, the kinds of stipends by fields were as follows:

a) Physical sciences

| | |
|---|---|
| 33 per cent | university TA |
| 9 per cent | university RA |
| 11 per cent | NSF fellowship |
| 6 per cent | AEC research assistantship |
| 6 per cent | scholarship from business/industry |

Each of the remainder is less than 5 per cent by source type.

TABLE 2.6

SOURCE AND TYPE OF FIRST STIPEND (AMERICAN GRADUATE STUDENTS)
IN EACH COMPOSITE FIELD OF GRADUATE STUDY

a) Per Cent of Physical Science Stipend Holders

| Source of Stipend | Type of Stipend[a] | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA |
| Atomic Energy Commission . . . . . . . . . . . . . . . . . | * | * | 6 | * |
| Department of Defense. . . . . . . . . . . . . . . . . . | * | * | 3 | 0[b] |
| National Science Foundation . . . . . . . . . . . . . . | 1 | 11 | 33 | 0 |
| Veterans Administration (excluding GI Bill) . . . . . | 0 | * | 0 | 0 |
| National Aeronautics and Space Administration. . . . . | * | * | * | 0 |
| Office of Education | | | | |
| National Defense Education Act . . . . . . . . . . . | * | 3 | 0 | * |
| Other Office of Education. . . . . . . . . . . . . . . | 0 | 0 | 0 | 0 |
| Public Health Service | | | | |
| National Institutes of Health Fellowship Program . . | * | * | * | 0 |
| NIH Training Grant and Traineeship Program . . . . . | 0 | * | * | 0 |
| Other Public Health Service. . . . . . . . . . . . . | * | * | * | * |
| Other Federal government . . . . . . . . . . . . . . . | 1 | * | 1 | * |
| Private foundation, philanthropic organizations, etc. | * | 2 | 1 | * |
| Industrial or business corporation or firm . . . . . . | 6 | 2 | 1 | * |
| Directly from the school I am now attending. . . . . . | 1 | 2 | 7 | 29 |
| The school I am attending, but I do not know the primary source . . . . . . . . . . . . . . . . . . . . | * | * | 2 | 4 |
| State or local government (U.S.) . . . . . . . . . . . | * | * | * | 1 |
| Foreign government or other foreign source . . . . . . | 0 | * | 0 | 0 |
| Other. . . . . . . . . . . . . . . . . . . . . . . . . | * | * | * | * |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . | 1,184 |
| NA . . . . . . . . . . . . . . . . | 15 |
| No stipend. . . . . . . . . . . . | 415 |
| Total N . . . . . . . . . . . | 1,614 |

*Less than one-half of 1 per cent.

[a]Columns do not total 100 per cent because of large number of cells in which there is less than one-half of 1 per cent.

[b]0 = no cases in cell.

(Table 2.6--continued)

TABLE 2.6--Continued

b) Per Cent of Engineering Stipend Holders

| Source of Stipend | Type of Stipend[a] | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA |
| Atomic Energy Commission. . . . . . . . . . . . . . . . . | * | * | * | 0[b] |
| Department of Defense . . . . . . . . . . . . . . . . . | 2 | * | 3 | 0 |
| National Science Foundation . . . . . . . . . . . . . . | * | 5 | 2 | 0 |
| Veterans Administration (excluding GI Bill) . . . . . | * | 0 | 0 | 0 |
| National Aeronautics and Space Administration . . . . | 2 | * | * | 0 |
| Office of Education | | | | |
| National Defense Education Act. . . . . . . . . . . . | 0 | 2 | * | 0 |
| Other Office of Education . . . . . . . . . . . . . | 0 | * | 0 | 0 |
| Public Health Service | | | | |
| National Institutes for Health Fellowship Program . | 0 | * | 0 | * |
| NIH Training Grant and Traineeship Program. . . . . | 0 | * | * | 0 |
| Other Public Health Service . . . . . . . . . . . . | 0 | * | * | 0 |
| Other Federal government. . . . . . . . . . . . . . . | 1 | * | 2 | 0 |
| Private foundation, philanthropic organizations, etc. | * | 3 | * | 0 |
| Industrial or business corporation or firm. . . . . . | 22 | 8 | 2 | * |
| Directly from the school I am now attending . . . . . | 3 | 2 | 8 | 14 |
| The school I am attending, but I do not know the primary source. . . . . . . . . . . . . . . . . . . . . | * | * | 2 | 2 |
| State or local government (U.S.). . . . . . . . . . . | 1 | * | * | * |
| Foreign government or other foreign source. . . . . . | 0 | 0 | 0 | 0 |
| Other . . . . . . . . . . . . . . . . . . . . . . . . | * | * | * | * |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . | 801 |
| NA. . . . . . . . . . . . . . . . | 18 |
| No stipend. . . . . . . . . . . . | 506 |
| Total N . . . . . . . . . . . . | 1,325 |

TABLE 2.6--Continued

c) Per Cent of Life Science Stipend Holders

| Source of Stipend | Type of Stipend[a] | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA |
| Atomic Energy Commission | 0[b] | * | * | 0 |
| Department of Defense | * | * | 0 | 0 |
| National Science Foundation | * | 10 | 4 | * |
| Veterans Administration (excluding GI Bill) | 0 | 0 | 0 | 0 |
| National Aeronautics and Space Administration | 0 | 0 | * | 0 |
| Office of Education | | | | |
| National Defense Education Act | 0 | 2 | * | 0 |
| Other Office of Education | 0 | 0 | 0 | 0 |
| Public Health Service | | | | |
| National Institutes of Health Fellowship Program | * | 4 | 1 | 0 |
| NIH Training Grant and Traineeship Program | 0 | 9 | 3 | 2 |
| Other Public Health Service | 0 | * | 2 | * |
| Other Federal government | * | * | 2 | 0 |
| Private foundation, philanthropic organizations, etc. | 0 | * | * | * |
| Industrial or business corporation or firm | * | * | 2 | * |
| Directly from the school I am now attending | 2 | 2 | 10 | 18 |
| The school I am attending, but I do not know the primary source | * | 1 | 6 | 3 |
| State or local government (U.S.) | 3 | * | 2 | * |
| Foreign government or other foreign source | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | * | * |

| | |
|---|---|
| N | 790 |
| NA | 19 |
| No stipend | 195 |
| Total N | 1,004 |

*Less than one-half of 1 per cent.

[a]Columns do not total 100 per cent because of large number of cells in which there is less than one-half of 1 per cent.

[b]0 = no cases in cell.

(Table 2.6--continued)

TABLE 2.6--Continued

d) Per Cent of Behavioral Science Stipend Holders

| Source of Stipend | Type of Stipend[a] | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | RA | TA |
| Atomic Energy Commission . . . . . . . . . . . . . . . | 0[b] | 0 | 0 | 0 |
| Department of Defense . . . . . . . . . . . . . . . . . | * | * | 1 | 0 |
| National Science Foundation . . . . . . . . . . . . . | 0 | 3 | 2 | 0 |
| Veterans Administration (excluding GI Bill) . . . . . | * | * | 1 | * |
| National Aeronautics and Space Administration . . . . . | 0 | 0 | * | 0 |
| Office of Education | | | | |
| National Defense Education Act. . . . . . . . . . . . | * | 5 | 0 | 0 |
| Other Office of Education . . . . . . . . . . . . . | 0 | * | * | 0 |
| Public Health Service | | | | |
| National Institutes of Health Fellowship Program. . | * | 7 | 1 | * |
| NIH Training Grant and Traineeship Program. . . . . | * | 5 | 1 | * |
| Other Public Health Service . . . . . . . . . . . . | 0 | 1 | 2 | 0 |
| Other Federal government. . . . . . . . . . . . . . . . | * | * | 3 | 0 |
| Private foundation, philanthropic organizations, etc. | * | 4 | 1 | 0 |
| Industrial or business corporation or firm. . . . . . | 1 | 1 | * | 0 |
| Directly from the school I am now attending . . . . . | 4 | 4 | 12 | 19 |
| The school I am attending, but I do not know the primary source. . . . . . . . . . . . . . . . . . . | * | * | 4 | 2 |
| State or local government (U.S.). . . . . . . . . . . | 1 | 1 | 2 | 1 |
| Foreign government or other foreign source. . . . . . | 0 | 0 | 0 | 0 |
| Other . . . . . . . . . . . . . . . . . . . . . . . . | 1 | * | 1 | * |

| | |
|---|---|
| N . . . . . . . . . . . . . | 661 |
| NA . . . . . . . . . . . . . | 13 |
| No stipend . . . . . . . . . | 381 |
| Total N . . . . . . . . . . | 1,055 |

TABLE 2.6--Continued

e) Per Cent of Humanities Stipend Holders

| Source of Stipend | Type of Stipend[a] | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | TA | RA |
| Atomic Energy Commission | 0[b] | 0 | 0 | 0 |
| Department of Defense | * | * | 0 | 0 |
| National Science Foundation | 0 | 0 | 0 | 0 |
| Veterans Administration (excluding GI Bill) | 0 | 0 | 0 | 0 |
| National Aeronautics and Space Administration | 0 | 0 | 0 | 0 |
| Office of Education | | | | |
| National Defense Education Act | * | 7 | * | * |
| Other Office of Education | 0 | 0 | 0 | 0 |
| Public Health Service | | | | |
| National Institutes of Health Fellowship Program | 0 | 0 | * | 0 |
| NIH Training Grant and Traineeship Program | 0 | 0 | 0 | 0 |
| Other Public Health Service | 0 | 0 | 0 | 0 |
| Other Federal government | * | * | * | 0 |
| Private foundation, philanthropic organizations, etc. | 1 | 7 | * | * |
| Industrial or business corporation or firm | * | * | 0 | 0 |
| Directly from the school I am now attending | 11 | 7 | 6 | 37 |
| The school I am attending, but I do not know the primary source | 1 | 2 | * | 2 |
| State or local government (U.S.) | 7 | 2 | 0 | * |
| Foreign government or other foreign source | 0 | 0 | 0 | 0 |
| Other | * | * | * | * |

| | |
|---|---|
| N | 424 |
| NA | 16 |
| No stipend | 491 |
| Total N | 931 |
| Total, all fields | 5,929 |
| NA, stipend holding | 7 |
| Aliens | 878 |
| Total N | 6,814 |

*Less than one-half of 1 per cent.

[a]Columns do not total 100 per cent because of large number of cells in which there is less than one-half of 1 per cent.

[b]0 = no cases in cell.

b) Engineering:

| | |
|---|---|
| 22 per cent | scholarship from private business/industry |
| 16 per cent | university TA |
| 10 per cent | university RA |
| 5 per cent | NSF fellowship |
| 8 per cent | fellowship from business/industry |
| 3 per cent | university scholarship |
| The remainder | are below 5 per cent by source-type |

c) Life sciences:

| | |
|---|---|
| 21 per cent | university TA[8] |
| 16 per cent | university RA |
| 13 per cent | NIH fellowship or traineeship |
| 10 per cent | NSF fellowship |
| 4 per cent | NSF research assistantship |
| 4 per cent | NIH research assitantship |
| The remainder | are scattered by source-type |

d) Behavioral sciences:

| | |
|---|---|
| 16 per cent | university RA |
| 21 per cent | university TA |
| 12 per cent | NIH fellowship |
| 4 per cent | university fellowship |
| 4 per cent | university scholarship |
| 4 per cent | fellowship from a private foundation, etc. |
| 5 per cent | NDEA fellowship |
| The remainder | are scattered |

e) Humanities:

| | |
|---|---|
| 39 per cent | university TA |
| 12 per cent | university scholarship |
| 9 per cent | university fellowship |
| 6 per cent | university RA |
| 7 per cent | scholarship from state or local government |
| 7 per cent | NDEA fellowship |
| 7 per cent | fellowship from a private foundation, etc. |
| The remainder | are dispersed; none comprises 5 per cent or more of this composite field |

## First and Second Stipends: Field, Source, and Type

Table 2.7a-e shows the kinds of stipends held by the sample of students in each of the five composite fields. In each panel of the table the four top-ranking source types found in that field for the first stinend

[8] The percentages indicated for university sources are the combined "directly from school of attendance" and "from the school, but I don't know the source" categories.

TABLE 2.7

STIPENDS (SOURCE TYPE) HELD MOST FREQUENTLY BY AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY

(Per Cent Holding Stipends)

a) Physical Sciences

| First Stipend | Second Stipend | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | None | TA from School | Fellowship from NSF | RA from School | Scholarship from Industry | All Other | First | First and Second |
| TA from school . . | 17 | 1 | 1 | 1 | * | 5 | 25 | 30 |
| Fellowship from NSF. . . . . . . | 5 | 1 | 1 | * | - | 1 | 9 | 10 |
| RA from school . . | 4 | 1 | * | * | - | 1 | 6 | 8 |
| Scholarship from industry . . . . | 4 | - | - | - | * | * | 4 | 4 |
| All other. . . . | 20 | 3 | * | 1 | - | 5 | 30 | 37 |
| Total, second stipend. . . . | 50 | 6 | 2 | 2 | * | 12 | 74 | |
| No stipend | 26 | | | | | | | |

N . . . . . . . . . . . . 1,590
NA . . . . . . . . . . . . 24
Total N . . . . . . . . 1,614

b) Engineering

| | None | Scholarship from Industry | TA from School | RA from School | Fellowship from Industry | All Other | First | First and Second |
|---|---|---|---|---|---|---|---|---|
| Scholarship from industry . . . . | 11 | 2 | - | * | - | - | 13 | 14 |
| TA from school . . | 7 | - | * | * | - | 1 | 10 | 12 |
| RA from school . . | 5 | * | * | * | * | * | 6 | 8 |
| Fellowship from industry . . . . | 4 | * | * | * | * | 1 | 5 | 5 |
| All other. . . . | 19 | * | 2 | 1 | * | 5 | 27 | 30 |
| Total, second stipend. . . . | 47 | 3 | 3 | 2 | * | 8 | 62 | |
| No stipend . . . | 39 | | | | | | | |

N . . . . . . . . . . . . 1,299
NA . . . . . . . . . . . . 26
Total N . . . . . . . . 1,325

*Less than one-half of 1 per cent.

(Table 2.7--Continued)

TABLE 2.7--Continued

c) Life Science

| First Stipend | Second Stipend: None | Second Stipend: TA from School | Second Stipend: RA from School | Second Stipend: Fellowship from NIH | Second Stipend: Fellowship from NSF | Second Stipend: All Other | Total: First | Total: First and Second |
|---|---|---|---|---|---|---|---|---|
| TA from school. . | 12 | 1 | 1 | * | 1 | 2 | 17 | 20 |
| RA from school. . | 11 | * | * | - | - | 1 | 13 | 15 |
| Fellowship from NIH . . . . . . | 8 | 1 | * | * | - | 1 | 11 | 12 |
| Fellowship from NSF . . . . . . | 6 | 1 | * | - | 1 | 1 | 8 | 9 |
| All other . . . | 23 | 2 | 1 | * | * | 5 | 32 | 37 |
| Total, second stipend . . . | 63 | 4 | 2 | 1 | 2 | 10 | 81 | |
| No stipend . . | 20 | | | | | | | |

N . . . . . . . . . . . . . 975
NA . . . . . . . . . . . . . 29
Total N . . . . . . . . .1,004

d) Behavioral Science

| First Stipend | None | TA from School | RA from School | Fellowship from NIH | Fellowship from NDEA | All Other | First | First and Second |
|---|---|---|---|---|---|---|---|---|
| TA from school. . | 8 | 1 | 1 | - | * | 3 | 14 | 16 |
| RA from school. . | 7 | * | * | - | - | 2 | 10 | 13 |
| Fellowship from NIH . . . . . . | 6 | * | 1 | - | - | 1 | 8 | 8 |
| Fellowship from NDEA. . . . . . | 2 | * | * | - | * | 1 | 3 | 4 |
| All other . . . | 21 | 1 | 1 | * | * | 5 | 29 | 36 |
| Total, second stipend . . . | 45 | 3 | 4 | * | * | 11 | 64 | |
| No stipend. . . | 37 | | | | | | | |

N . . . . . . . . . . . . 1,033
NA . . . . . . . . . . . . 22
Total N . . . . . . . . 1,055

*Less than one-half of 1 per cent.

TABLE 2.7--Continued

e) Humanities

| First Stipend | Second Stipend | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | None | TA from School | Scholarship from School | Fellowship from Foundation | Fellowship from School | All Other | First | First and Second |
| TA from school . | 15 | 2 | 1 | * | * | 1 | 19 | 21 |
| Scholarship from school . . . . | 4 | * | 1 | * | - | * | 6 | 8 |
| Fellowship from foundation . . | 3 | * | * | * | - | * | 3 | 4 |
| Fellowship from school . . . . | 3 | 1 | * | - | * | - | 4 | 5 |
| All other. . . | 11 | 1 | 1 | - | * | 2 | 15 | 16 |
| Total, second stipend. . . | 37 | 4 | 3 | * | 1 | 3 | 47 | |
| No stipend . . | 54 | | | | | | | |

| | |
|---|---|
| N . . . . . . . . . . . . | 909 |
| NA . . . . . . . . . . . | 22 |
| Total N . . . . . . . . | 931 |

| | |
|---|---|
| Total, all fields . . . | 5,929 |
| NA, stipend holding . . | 7 |
| Aliens . . . . . . . . . | 878 |
| Total N . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

were cross-tabulated by the same four source types for the second stipend of all multiple stipend holders. The data were percentaged across the entire sample while the previous table summarized the information for stipend holders only.

a) Physical sciences.--Three out of ten students in the physical sciences composite field held university TA's, one-fourth (25 per cent) as their first and 6 per cent as their second stipend. Some 17 per cent of the sample were single stipend holders who held TA's at the school they were attending during the twelve-month period under study in this survey. Another one out of ten secured fellowship support from NSF to pursue advanced studies in the physical sciences; 8 per cent held university RA's as their first or second stipends, and 4 per cent received scholarships from industry or business. Another one out of three students (37 per cent) in the sample of the physical science fields of study held a wide variety of stipends that provided support less frequently than these four when classified by source and type together.

b) Engineering.--In engineering still another pattern of support prevailed according to Table 2.7b. The stipend most frequently held either first or second, was a scholarship from an industrial firm or business: 14 per cent of the sample in this composite field of study secured this form of support during the academic year 1962-63. Another 12 per cent reported that a university TA provided support, 8 per cent held a university RA, and 5 per cent received fellowship support from business or industry. Three out of ten students held other forms of support that were less frequently reported than these top four.

c) Life sciences.--Table 2.7c shows that one out of five (20 per cent) of the students in the life sciences held university teaching assistantships as their first and/or second stipends. It shows, furthermore, that 17 per cent held this kind of stipend as their first (and most valuable) stipend, 12 per cent were single stipend holders, and 4 per cent of the sample held the university TA as second stipends.

Another 15 per cent received a university research assistantship as their first or second stipend, one out of ten (9 per cent) held a fellowship from NSF, and another one out of ten (12 per cent) had secured fellowships from NIH. Over one-third (37 per cent) of the sample held stipends of various kinds that ranked in frequency below these top four stipends classified jointly by source and type.

d) Behavioral sciences.--Table 2.7d shows that some 16 per cent of the sample in the behavioral sciences held university teaching assistantships as their first and/or second stipends; another 13 per cent of these students secured RA's at the schools they were attending. The university TA was held by 14 per cent of the sample as their first stipend (and the one with the highest value), while 8 per cent were single stipend holders with this kind of stipend. Less than one out of ten (8 per cent) held NIH fellowships as first or second stipends; the remainder secured stipends of various kinds that were held by fewer than one student out of twenty in behavioral science when the stipends were classified by source and type.

e) Humanities.--We have already shown that the humanities labored under a handicap when compared with science and engineering. When secured, support was provided primarily by the school in which the graduate student was enrolled: 21 per cent of the sample in this composite field held university TA's as their first or second stipends, and another 8 per cent had received scholarships from their universities. The one out of five students holding a university TA was accounted for as follows: 19 per cent had this kind of support as first stipends, 4 per cent as second, 2 per cent held two university TA's, and 15 per cent of the sample were single stipend holders with this form of support. The remaining source types were held in less than one out of twenty cases.

## Cash Value of All Stipends

Sources and types of stipends aside, what was the cash value of all stipends secured during the 1962-63 academic year.[9] Table 2.8 shows that some four out of ten students in the life and physical sciences held stipends with a total cash value of at least $2,500 (physical sciences, 40 per cent; life sciences, 45 per cent). In the behavioral sciences, 31 per cent and in engineering 27 per cent of the students held stipends with cash values of $2,500 or more, while only 15 per cent of those in the

[9]See Question 29-D for the item.

TABLE 2.8

CASH VALUE OF ALL STIPENDS HELD AND COMPOSITE FIELD OF GRADUATE STUDY (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Cash Value of All Stipends | | | | | | | | Mean Value (Approximate) | N |
|---|---|---|---|---|---|---|---|---|---|---|
| | None | Less Than $999 | $1,000-$1,499 | $1,500-$2,499 | $2,500-$2,999 | $3,000-$4,999 | $5,000-$7,999 | $8,000 or More | | |
| Life science. . . . | 19 | 11 | 4 | 20 | 16 | 26 | 3 | * | $2,700 | 996 |
| Physical science . | 25 | 11 | 4 | 19 | 12 | 26 | 2 | * | $2,646 | 1,595 |
| Behavioral science. | 36 | 8 | 5 | 20 | 11 | 17 | 3 | * | $2,350 | 1,042 |
| Engineering . . . . | 38 | 21 | 4 | 10 | 8 | 15 | 3 | 1 | $2,200 | 1,300 |
| Humanities. . . . . | 53 | 12 | 3 | 17 | 6 | 9 | * | 0 | $2,000 | 916 |
| Total, all five fields . | 33 | 13 | 4 | 17 | 11 | 19 | 2 | * | | 5,849 |

| | |
|---|---|
| NA . . . . . . . . . . . . . . . . . . | 87 |
| Total. . . . . . . . . . . . . . . . . | 5,936 |
| Aliens . . . . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

humanities did as well. The advantages accruing to the students in the life and physical sciences, when compared to the other fields included in this study, is shown again by computing the median cash value of the stipends held. In the life sciences the median cash value was $2,700; in the physical sciences it was $2,646. The median cash value in the behavioral sciences was somewhat lower, amounting to $2,350 and it was even lower in engineering--$2,200. Not only were students in the humanities fields of English and history least likely to have held stipends, but when they were received, their median cash value was also the lowest--about $2,000. Since tuition and fees were charged against the cash value of stipends, it is evident that stipends alone hardly bespeak affluence for most graduate students.[10]

## Some Academic Correlates of Stipend Holding

Whether or not a graduate student managed to secure a stipend to assist him in his pursuit of a degree depended on several academic factors, of which field of study was only one, albeit a very important one. Presumably, other academic considerations entered into the picture as well. In this section we examine academic performance and academic progress in graduate study as factors shaping a student's chances of securing stipend support in the five composite fields of study.

### Field, Academic Performance, and Stipend Holding

If the students' self-reported current grade point average (GPA) is taken as an indicator of the kind of performance that counts in these matters, then Table 2.9 shows that academic performance did indeed affect the distribution of stipends. Among the sample who reported a GPA for graduate courses completed at the time they returned their questionnaires, 74 per cent of those reporting A or A- also held stipends during the last academic year, as did two-thirds of those attaining a B+ average; on the other hand, this percentage declined to 57 among the students reporting a B average or lower in course work for which grades were received. When field of study is considered in examining this relationship, we see that

[10] Since one-half of these students were married, additional income was provided by working spouses. Other aspects of graduate student finances--sources, amounts, expenditure, etc.--are presented in Chapters 5 and 6.

achievement makes less difference in some fields and more in others. For example, life science students scoring B or less did almost as well as their colleagues who averaged A or A- (87 versus 75 per cent); this situation was found as well in engineering (although the absolute level of stipend holding for each GPA category was lower in engineering than in life sciences). Reading across the table, we see that GPA strongly affected the chances of stipend holding in both the behavioral sciences and the humanities (in each case there was a difference of some 25 percentage points in stipend holding between the high and low GPA categories).

TABLE 2.9

COMPOSITE FIELD OF GRADUATE STUDY, CUMULATIVE GRADUATE GRADE POINT AVERAGE, AND STIPEND HOLDING (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Grade Point Average | | | N |
|---|---|---|---|---|
| | A, or A- | B+ | B or Less | |
| Life science. . . . | 87 (365) | 79 (342) | 75 (291) | 998 |
| Physical science. . | 82 (582) | 77 (459) | 64 (562) | 1,603 |
| Behavioral science. | 73 (471) | 62 (352) | 47 (225) | 1,048 |
| Engineering . . . . | 69 (530) | 58 (396) | 55 (397) | 1,323 |
| Humanities. . . . . | 57 (393) | 49 (281) | 30 (252) | 926 |
| Total, all five fields. . . | 74 (2,341) | 66 (1,830) | 57 (1,727) | 5,898 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 5,898 |
| NA, GPA . . . . . . . . . . | 31 |
| NA, stipend . . . . . . . . | 7 |
| Aliens . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

Reading down the columns, the rank ordering of fields was quite stable in the percentage holding stipends in each GPA group: Life science was the highest, followed by physical sciences, behavioral sciences, engineering, and humanities. There was one slight variation at the lower end of the GPA scale: Engineers scoring B or less did as well as their fellow engineering students scoring B+; and engineers and behavioral science students switched ranks in the order of stipend holding in the bottom GPA group. Nevertheless, the conclusion is that academic performance only affected the chances of stipend holding in a secondary way. The outcome was that poor students in life sciences did better than the best students in behavioral sciences and engineering in securing a stipend; and they completely outstripped the best students in humanities in gaining access to this source of income if grades are an indication of student quality.

## Field, Academic Progress, and Stipend Holding

The measure of academic progress to be employed in this analysis is the one constructed by Davis (1962) for his 1958 study. His "Index of Academic Stage" combined years of study and academic progress, thus locating the graduate student in his movement toward a graduate degree in a system that lacks the structural clarity found in high school and college. The index yields four stages of study:

Stage I: Students having completed one academic year or less, regardless of degree sought or type of academic work.

Stage II: Master's candidates who have completed one or more years of graduate work.

Stage III: Ph.D. candidates who have completed one year or more of graduate study, but who are not working on their theses.

Stage IV: Ph.D. candidates who have completed a year or more of graduate study and are working on their theses (Davis, 1962, p. 19).

Table 2.10 shows that stage importantly influenced chances of securing stipend support during the academic year 1962-63. Among students having completed one academic year or less (Stage I), some 60 per cent held stipends, the percentage steadily rising with each stage and culminating in a rate of stipend holding of 86 per cent among the doctoral candidates working on their dissertation (Stage IV). That field of study was also an important determinant of stipend holding is shown by the fact that life science students consistently held stipends at rates higher than students in other fields, and that the rate for life science neophytes (Stage I) is about the same as the rate for the most advanced students of the behavioral sciences and the humanities.

TABLE 2.10

COMPOSITE FIELD OF GRADUATE STUDY, STAGE OF STUDY, AND STIPEND HOLDING (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipend)

| Composite Field of Study | Stage of Study | | | | N |
|---|---|---|---|---|---|
| | I | II | III | IV | |
| Physical science. . | 69 (548) | 70 (339) | 77 (185) | 90 (404) | 1,476 |
| Life science. . . . | 76 (328) | 80 (252) | 87 (69) | 90 (266) | 1,202 |
| Engineering . . . . | 60 (603) | 51 (286) | 74 (132) | 85 (181) | 888 |
| Behavioral science. | 58 (370) | 58 (189) | 80 (192) | 74 (197) | 948 |
| Humanities. . . . . | 37 (395) | 42 (187) | 75 (131) | 79 (84) | 797 |
| Total, all five fields. . . . | 60 (2,244) | 61 (1,226) | 78 (709) | 86 (1,132) | 5,311 |

| | |
|---|---|
| N . . . . . . . . . . . . . . . | 5,311 |
| NA, stage . . . . . . . . . . . | 618 |
| NA, stipend . . . . . . . . . . | 7 |
| Aliens . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

## Field, Stage, and GPA

Putting together the three variables of field of study, academic progress (measured by the Stage Index), and academic performance (given by the current GPA in graduate study), Table 2.11 shows that field remained

TABLE 2.11

COMPOSITE FIELD OF GRADUATE STUDY, GRADE POINT AVERAGE, STAGE OF STUDY, AND STIPEND HOLDING (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Grade Point Average | Stage of Study I | II | III | IV |
|---|---|---|---|---|---|
| Life science . . . . | A, A- | 79 (107) | 91 (67) | 88 (25) | 91 (123) |
| | B+ | 74 (94) | 75 (76) | 91 (33) | 87 (95) |
| | B or less | 78 (106) | 74 (81) | - [11][a] | 94 (48) |
| Physical science . . | A, A- | 78 (160) | 79 (96) | 84 (81) | 89 (205) |
| | B+ | 73 (135) | 70 (111) | 75 (52) | 91 (126) |
| | B or less | 62 (219) | 62 (132) | 66 (50) | 88 (67) |
| Engineering. . . . . | A, A- | 65 (218) | 60 (81) | 72 (69) | 87 (122) |
| | B+ | 56 (159) | 49 (104) | 72 (53) | 82 (44) |
| | B or less | 61 (188) | 44 (101) | - [10] | - [15] |
| Behavioral science . | A, A- | 69 (147) | 68 (65) | 81 (90) | 80 (118) |
| | B+ | 57 (111) | 57 (79) | 81 (69) | 62 (61) |
| | B or less | 44 (97) | 43 (44) | 71 (32) | - [16] |
| Humanities . . . . . | A, A- | 44 (140) | 51 (70) | 82 (73) | 82 (56) |
| | B+ | 43 (100) | 43 (68) | 69 (48) | 73 (22) |
| | B or less | 28 (111) | 28 (46) | - [ 9] | - [ 5] |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 5,141 |
| NA, grades. . . . . . . . . . | 170 |
| NA, stage . . . . . . . . . . | 589 |
| NA, grades and stage. . . . | 29 |
| NA, stipend . . . . . . . . . | 7 |
| Aliens . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

[a]Indicates base is too small for percentaging.

the crucial determinant of levels of stipend holding, but that within each field there was a distinctive pattern of stipend holding accounted for by the remaining two academic variables.

In the life sciences, sheer "survival" to Stage IV almost automatically guaranteed the student some form of stipend support, and GPA mattered not at all. In fact, the bottom GPA group in Stage IV did slightly better than the very best group, but among beginning students there was not any difference.

The relationships in the physical science field between stage and GPA can be formulated as follows: with each downward step in talent, stage played an increasingly important role in securing stipend support; and with each successive stage of study, performance as measured by current GPA was increasingly less important in stipend holding. This same pattern was apparent in the life sciences and engineering. The usual relationship obtained when the influence of talent was assessed at each level of academic progress; advanced students invariably reported stipend support more frequently than those at early stages of the game at each level of academic performance.

On the whole, stage and GPA both made a difference in the behavioral sciences as well. But stage was more important at some points and less so at others. Thus the brightest students always secured more stipends than the poorer students at each stage; and students in Stages III and IV did better than those in Stages I and II.

The humanities, operating under conditions of relative scarcity, showed the sharpest differences among the five fields in rates of stipend holding when stage and GPA were jointly considered; over eight out of ten talented students in advanced stages of study held a stipend in contrast with nearly three out of ten of the poorest students in the first year of graduate study. Differences by stage were more important than differences by GPA, which was also the case in other fields.

In summary, there were distinctive field differences at each stage and GPA category. Thus eight out of ten (79 per cent) of the Stage I life science students who reported GPA's of A or A- in their graduate work held a stipend, while the humanities student with identical academic characteristics held a stipend in only four cases out of ten. In the main, the effects of stage and GPA within most fields were additive, with the academically superior students at advanced stages of study most likely and the beginning students of lesser ability least likely to have stipend support.

Type of First Stipend, by Field and Stage

It has been demonstrated that whether or not a graduate student held a stipend depended heavily on field and stage of study. In this section we show that type of stipend secured depended on these same factors. Table 2.12 shows that, across the board, students were less likely to have scholarships with values equal to or less than their tuition bills as they advanced through their academic studies; they were somewhat more likely to have fellowships paying their tuition bills and providing cash grants as their first stipends as they moved into Stage III; they were also more likely to have duty stipends entailing research during the final stages of advanced study. Interestingly, duty stipends entailing teaching increased from Stage I through Stage III, but dropped again in frequency among students in Stage IV.

Students in engineering were most likely to hold scholarships at Stage I (41 per cent); they also outstripped the other fields in holding scholarships at Stages II and III, but showed little difference from advanced students in humanities by the time they reached Stage IV. Some 19 per cent of those in physical sciences, 13 per cent in life sciences, and 17 per cent in behavioral sciences also held scholarships as beginning students, but this type of first stipend largely disappeared by the time these students reached advanced stages of study. Students in humanities were twice as likely as those in behavioral sciences to hold scholarships at every stage of study. Within each field, however, chances of holding this type of stipend were reduced substantially as students moved through the system.

The second type of nonduty stipend, the fellowship, was available most readily at the early stages of study to students in the life and behavioral sciences and the humanities: about three out of ten stipend holders in each of these fields, as compared with some two out of ten in engineering and the physical sciences, received fellowships. At Stage IV engineering stood abreast of the life and behavioral sciences: some four out of ten in these fields were fellowship holders compared with only three out of ten in physical sciences and humanities. Since the fellowship permits the student to meet his academic requirements unhampered by stipend duties which may or may not contribute to his graduate program, and since it provides a cash grant as well, students in this category were presumably provided with the best opportunity for rapid completion of the degree program.

Research assistantships were rare in the humanities: not many more than one student out of ten had this type of support at any stage. Again, both the life and behavioral sciences were more likely to hold RA's than their engineering and physical science counterparts in the very early stages of study. At Stage IV, however, about four out of ten stipend holders in engineering, physical science, and life science secured RA's in contrast to three out of ten stipend holders in the behavioral sciences. In both engineering and the physical sciences, there was a rise in this type of stipend holding when first-year students were compared with those working on doctoral dissertations.

The field and stage pattern in teaching assistantships was different: in each field save the humanities the proportion of stipend holders with TA's was lowest at Stage IV. In the life and behavioral sciences the relationship appeared to be curvilinear--TA's were relatively infrequent at Stage I, more frequent at Stages II and III, and they dropped again at the last stage of advanced study. In engineering, TA's were held more frequently in Stages I and III than in Stages II and IV. In the physical sciences, some four out of ten stipend holders held the TA at every stage but the last; only one out of four were TA's at the time they were working on dissertations for the doctorate. In the humanities, about one out of three were teaching assistants in the early stages of study, six out of ten at Stage III, and almost one out of two at Stage IV, if they had any form of stipend support.

TABLE 2.12

TYPE OF FIRST STIPEND, STAGE OF STUDY, AND COMPOSITE FIELD OF GRADUATE STUDY (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

| Composite Field of Study | Stage of Study | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | a) Per cent of stipend holders holding scholarships | | | | b) Per cent of stipend holders holding fellowships | | | |
| | I | II | III | IV | I | II | III | IV |
| Physical science. . | 16 | 19 | 8 | 4 | 22 | 17 | 31 | 30 |
| Engineering . . . . | 41 | 38 | 32 | 11 | 20 | 20 | 42 | 44 |
| Life science. . . . | 13 | 10 | 5 | 2 | 26 | 31 | 40 | 42 |
| Behavioral science. | 12 | 33 | 8 | 5 | 36 | 18 | 33 | 45 |
| Humanities. . . . . | 29 | 27 | 14 | 14 | 33 | 20 | 20 | 36 |
| | c) Per cent of stipend holders holding research assistantships | | | | d) Per cent of stipend holders holding teaching assistantships | | | |
| Physical science. . | 17 | 22 | 19 | 41 | 44 | 41 | 43 | 24 |
| Engineering . . . . | 19 | 24 | 16 | 38 | 19 | 18 | 21 | 7 |
| Life science. . . . | 35 | 29 | 30 | 40 | 25 | 31 | 25 | 16 |
| Behavioral science. | 32 | 20 | 32 | 32 | 20 | 30 | 26 | 18 |
| Humanities. . . . . | 9 | 12 | 5 | 6 | 28 | 42 | 61 | 44 |

e) Summary of Tables 2.12a-d: Type of first stipend and stage of study for all fields combined

| Type of First Stipend | Per Cent of Stipend Holders | | | |
|---|---|---|---|---|
| | Stage of Study | | | |
| | I | II | III | IV |
| Scholarship . . . . . . . | 23 | 20 | 13 | 6 |
| Fellowship. . . . . . . . | 26 | 23 | 31 | 38 |
| Research assistantship. . | 22 | 24 | 21 | 36 |
| Teaching assistantship. . | 29 | 32 | 36 | 20 |
| Total . . . . . . . . | 100 | 99 | 101 | 100 |

(Table 2.12--continued)

TABLE 2.12--Continued

| Composite Field of Study | f) Numerical bases for percentages in Tables 2.12a-d | | | |
|---|---|---|---|---|
| | Stage of Study | | | |
| | I | II | III | IV |
| Physical science. . . . . | 378 | 232 | 140 | 361 |
| Engineering . . . . . . . | 351 | 143 | 95 | 152 |
| Life science. . . . . . . | 240 | 176 | 57 | 236 |
| Behavioral science. . . . | 211 | 106 | 150 | 142 |
| Humanities. . . . . . . . | 141 | 77 | 95 | 64 |
| All fields combined . | 1,321 | 734 | 537 | 955 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 3,544 |
| NA, type of stipend . . . . | 81 |
| NA, stage . . . . . . . . . . | 313 |
| No stipend. . . . . . . . . | 1,988 |
| NA, stipend . . . . . . . . | 7 |
| Aliens. . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

In summary, field-stage differences in types of stipends held are shown in the panel below, which indicates the most frequently mentioned stipend held at the first and the last stages of study in each of the fields.

| Field | Stage I | Stage IV |
|---|---|---|
| Physical science | TA | RA |
| Engineering | Scholarship | Fellowship |
| Life science | RA | Fellowship |
| Behavioral science | Fellowship | Fellowship |
| Humanities | Fellowship | TA |

Duties for First Stipend

Some 42 per cent of the sample held first stipends that entailed certain duties during the twelve-month period. What were these duties? Table 2.13 shows that 29 per cent of the recipients of duty stipends were leading discussion or laboratory sections; another 40 per cent were working "on research project directed by someone else"; 33 per cent instructed undergraduate sections; hardly anybody was required to "lead seminars"; and 17 per cent had "other duties."

TABLE 2.13

DUTIES OF FIRST STIPEND AND COMPOSITE FIELD OF GRADUATE STUDY (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent of Research and Teaching Assistants with Various Duties)

| Duties of First Stipend | Composite Field of Graduate Study | | | | | Total, Five Fields[a] |
|---|---|---|---|---|---|---|
| | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | |
| Lead dicussions or laboratory sections. . . | 34 | 26 | 38 | 18 | 22 | 29 |
| Lead seminars . | 1 | * | 1 | 1 | 1 | 1 |
| Work on research directed by someone else. | 34 | 52 | 50 | 50 | 8 | 40 |
| Instruct undergraduates . . | 35 | 25 | 24 | 29 | 61 | 33 |
| Other . . . . . | 13 | 14 | 15 | 27 | 27 | 17 |
| N . . . . . | 734 | 316 | 466 | 371 | 213 | 2,105 |

| | |
|---|---|
| NA . . . . . . . . . . . . . . . | 76 |
| Scholarships and fellowships . | 1,760 |
| No stipend . . . . . . . . . . . | 1,988 |
| NA, stipend . . . . . . . . . | 7 |
| Aliens . . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

[a]Percentages total more than 100 due to multiple responses.

Field differences in types of duties performed if the first (or only) stipend was an RA or TA are substantial. One-half of the engineers mentioned "research," as did one-half of the duty stipend holders in the life and behavioral sciences, but only one-third of the duty stipend holders in the physical sciences were required to work on a research project directed by somebody else. Since the core work in the humanities primarily entails solo effort, only 8 per cent of the graduate students holding duty stipends in history or English reported this type of "research" duty. On the other hand, over one-half (61 per cent) of the students holding duty stipends in the humanities were required to instruct undergraduate sections as compared with one-third of the physical science and behavioral science duty stipend holders and one-fourth of those in engineering and the life sciences. A related teaching function showed yet another distribution: about one-third of these students in the physical and life sciences and engineering were required to lead discussion or laboratory sections, as were one-fifth in the humanities and 18 per cent of the behavioral science students holding duty stipends. In summary, the division of graduate student labor depended heavily on field of study.

## Family Role and Nonstipend Employment

Whether or not a graduate student received a stipend during the academic year 1962-63 was influenced by a variety of academic factors. These were, primarily, field of study, stage of study, and academic performance. However, there are nonacademic factors that should be considered in any evaluation of the pattern of stipend support for graduate study. Probably the most critical of these are the obligations of some 55 per cent of the sample who were married and the 66 per cent of the married who were parents. The variables of sex, marital status, and the presence of children were combined by Davis into a Family Role Index for his 1958 survey of graduate students' finances (1962, pp. 32-33). This Index was employed in Table 2.14 to show the extent of stipend holding in each field.

Bachelors and husbands were equally likely (over seven out of ten), but fathers somewhat less likely (61 per cent), to hold stipends.

Thus students with the greatest financial need held stipends less frequently than bachelors unencumbered by family burdens or husbands without children who may have had working wives. The financial returns from non-stipend employment presumably dissuaded fathers from applying for stipends. Female graduate students showed the same pattern albeit with rates of stipend holding below that among men of similar status. For example, 73 per cent of the bachelors were stipend recipients in comparison with 66 per cent of the single women.

TABLE 2.14

STIPEND HOLDING, FAMILY ROLE, AND COMPOSITE FIELD OF GRADUATE STUDY (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Family Role | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | Women | | | | | |
| | Bachelor | | Husband | | Father | | Single | | Wife | | Mother | |
| Life science. . | 85 | (280) | 85 | (150) | 75 | (311) | 84 | (134) | 83 | (30) | 79 | (71) |
| Physical science . . . | 82 | (579) | 78 | (530) | 65 | (530) | 72 | (112) | 77 | (26) | 43 | (28) |
| Engineering . . | 70 | (389) | 65 | (248) | 56 | (668) | - | [1][a] | - | [2] | - | [2] |
| Behavioral science . . . | 71 | (277) | 69 | (190) | 59 | (332) | 71 | (128) | 50 | (38) | 45 | (56) |
| Humanities . . | 50 | (258) | 52 | (108) | 50 | (185) | 47 | (198) | 51 | (63) | 29 | (85) |
| Total, all five fields. . . . | 73 | (1,783) | 72 | (1,016) | 61 | (2,026) | 66 | (573) | 62 | (159) | 49 | (242) |

| | |
|---|---|
| N . . . . . . . . . . . . . | 5,799 |
| NA, family role . . . . . | 130 |
| NA, stipend . . . . . . . | 7 |
| Aliens . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . | 6,814 |

[a] Indicates base is too small for percentaging.

Differences between fathers and the other male students in extent of stipend holding occurred in every field except the humanities, where family role made no difference at all. This was not the case among women, however; only one out of four mothers (29 per cent) undertaking study in the humanities held a stipend, in contrast with about one-half of those who were single or wives without children. Single women in the behavioral sciences were as likely to secure stipend support as were bachelors in this field, but wives and mothers were less likely than husbands and fathers to do so.

In the physical sciences bachelors and fathers fared better than single women and mothers, but wives without children received stipend support as frequently as did husbands. It was only in life sciences that women in every family role category held stipends as often as men. In summary, graduate students who were parents were somewhat less likely to receive stipend support than were other students enrolled for graduate work in 1962-63, although there were variations that reflect the overall availability of support in each individual field of study.

While it is impossible to unravel cause and effect in the relationship between nonstipend employment and stipend holding in a survey of this design, it is evident from Table 2.15 that the two variables were closely connected; close to nine out of ten (87 per cent) students reporting no employment during the past academic year held some kind of stipend, while two-thirds (67 per cent) of the students who held some form of nonstipend employment during the same period also had a stipend. The more striking finding concerns the students who held regular full-time employment (i.e., thirty-five hours or more per week for at least ten months during the year): their rate of stipend holding was only 32 per cent. Differences by field further accentuate the relationship: virtually everybody in the life sciences not reporting employment held a stipend (94 per cent); only one out of five students in the humanities and the behavioral sciences with full-time regular employment also reported stipends as a source of income that year.

TABLE 2.15

STIPEND HOLDING, NONSTIPEND EMPLOYMENT, AND COMPOSITE FIELD OF GRADUATE STUDY (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Employment | | |
|---|---|---|---|
| | Not Employed | Employed | |
| | | Less Than Regular Full Time | Regular Full Time |
| Life science | 94 (546) | 77 (320) | 34 (138) |
| Physical science | 93 (707) | 74 (572) | 36 (335) |
| Engineering | 91 (294) | 76 (435) | 36 (590) |
| Behavioral science | 83 (415) | 64 (453) | 21 (187) |
| Humanities | 68 (358) | 41 (370) | 22 (203) |
| Total, all five fields | 87 (2,320) | 67 (2,156) | 32 (1,452) |

| | |
|---|---|
| N | 5,929 |
| NA, stipend | 7 |
| Aliens | 878 |
| Total N | 6,814 |

Considering the sample as a whole, family role influenced the rate of stipend holding among women after the effects of full-time regular employment were removed from consideration, but this was not the case among male graduate students. Table 2.16 shows that eight out of ten men in each family role category not reporting regular, full employment that year held stipends; one out of three men--bachelors, husbands, and fathers alike--who had full-time regular employment also held stipends. In contrast, 76 per cent of the single women not involved in full-time regular employment held stipends, but only 52 per cent of the mothers did as well.

Even among the women with full-time regular employment, unmarried women did better than mothers in securing this form of support (30 per cent versus 18 per cent).

TABLE 2.16

STIPEND HOLDING, FAMILY ROLE, AND NONSTIPEND EMPLOYMENT

(Per Cent of American Graduate Students in Five Fields Holding Stipends)

| Employment | Family Role | | | | | |
|---|---|---|---|---|---|---|
| | Men | | | Women | | |
| | Bachelor | Husband | Father | Single | Wife | Mother |
| Regular full time . . . . | 32 (232) | 34 (199) | 33 (837) | 30 (122) | - [11][a] | 18 (22) |
| Less than regular, including none. | 80 (1,551) | 81 (817) | 81 (1,189) | 76 (451) | 64 (148) | 52 (220) |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 5,799 |
| NA, family role . . . . . . | 130 |
| NA, stipend. . . . . . . . . | 7 |
| Aliens . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

[a]Indicates base is too small to percentage.

Nor is this the entire story. Table 2.17 shows that although the likelihood of full-time regular employment was closely related to availability of stipends, family roles operated differently among men and women in determining this form of employment behavior. Thus among the men without stipend support one out of three bachelors held full-time regular employment in contrast with seven out of ten fathers. Even among the male stipend holders over one-fifth (22 per cent) of the fathers also had full-time regular employment; only one out of twenty bachelors (6 per cent) did likewise. In comparison, some 44 per cent of the single women without stipend support worked thirty-five hours a week or more for at least ten months, but marriage substantially reduced this mode of employment if stipend support was absent.

TABLE 2.17

STIPEND HOLDING, FAMILY ROLE, AND EMPLOYMENT

(Per Cent of American Graduate Students in Five Fields With Regular Full-Time Employment)

| Stipend Holding | Family Role | | | | | |
|---|---|---|---|---|---|---|
| | Men | | | Women | | |
| | Bachelor | Husband | Father | Single | Wife | Mother |
| Yes . . . . . | 6 (1,310) | 9 (732) | 22 (1,329) | 10 (387) | 4 (98) | 3 (118) |
| No . . . . . | 33 (473) | 46 (284) | 72 (787) | 44 (195) | 11 (61) | 15 (124) |

| | |
|---|---|
| N . . . . . . . . . . . . | 5,799 |
| NA, family role . . . . | 130 |
| NA, stipend . . . . . . | 7 |
| Aliens . . . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

In summary, stipend support and full-time regular employment typically operated as alternative arrangements for most students enrolled for graduate study; both were reported frequently, however, among male students who were fathers.

## Stipend Holding: 1958 and 1963

In this last section, we deal with the question whether any changes took place in the extent of stipend holding in the fields for which information was gathered both in Davis' 1958 survey and again in the spring of 1963. Did any changes occur between these two points in the type of stipend support holders were able to secure?

The field classification employed in the present report closely resembles the earlier classification of graduate departments and divisions. Thus direct comparisons can be made for the behavioral sciences and the natural sciences (a combination of physical and life sciences), but Davis' coverage of the humanities was somewhat more comprehensive (our two fields of English and history comprise two-thirds of his humanities division). Since the engineering fields of study were not included in the first survey, our information provides a new baseline for measuring changes in this hitherto neglected field. The punched cards employed at NORC in the preparation of the 1958 study were retabulated, foreign nationals were excluded, and the humanities were limited to the two fields of English and history to insure comparability.

Table 2.18 shows that almost identical proportions of the students in the life sciences held stipends in 1958 and in 1963: some 77 per cent of these students in 1958 and 80 per cent in 1963 were recipients of some form of support for their graduate study. The rate of stipend holding in the behavioral sciences also showed very little change; 61 per cent in 1958 and 63 per cent five years later. Surprisingly, the rate of stipend holding in the physical sciences has declined slightly: 79 per cent formerly as against 74 per cent in 1963. It is possible that differences in study design and/or survey sampling variation account for this differential.[11] It _is_ safe to say that rate of stipend holding certainly did not shoot up in this field, despite the post-Sputnik rush to support education and research in the sciences. Finally, the two humanities fields registered a dip from the 1958 rate of 56 per cent to 46 per cent. It is clear that the two humanities fields--history and

---

[11]One difference concerns the composition of the physical sciences group in the two surveys: comparison shows that mathematicians, for example, comprise 30 per cent of the present group but only 20 per cent of the 1958 group of physical science students. Furthermore, the rate of stipend holding among mathematicians was 73.3 per cent in 1958, while these students among the composite physical science group in 1963 reported stipend holding to the extent of 67.1 per cent. Variations such as these could deflate the rate in 1963 without signifying a genuine decline in the extent of stipend holding among physical science students during the five-year interval.

English--included for study in this survey have not derived any benefits in terms of increases in the rate of graduate student stipend holding.

TABLE 2.18

STIPEND HOLDING AT TWO POINTS IN TIME (AMERICAN GRADUATE STUDENTS IN SELECTED FIELDS)

(Per Cent Holding Stipends)

| Field of Study | Date | |
|---|---|---|
| | 1958 | 1963 |
| Life science. . . . . . | 77 (287) | 80 (1,004) |
| Physical science . . . | 79 (804) | 74 (1,614) |
| Behavioral science . . | 61 (497) | 63 (1,055) |
| Humanities . . . . . . | 56 (524) | 46 (931) |

Statements concerning rates of stipend holding, of course, tell us nothing about the numbers of graduate students in the several composite fields who held stipends in 1958 and in 1963. In fact, more students were holding stipends in 1963 than in 1958, but these were fields of expanding enrollments. Hence the rate could remain stable or decline somewhat despite an absolute increase in the number of students who secure stipend support.

Furthermore, the types of stipends available to recipients shifted in each of the four composite fields for which comparisons were possible. As seen in Table 2.19, the type of change and the number of changes depended on field of study.[12] Arbitrarily assuming that a percentage difference of at least five points probably signified an increase

[12]The reader is cautioned that comparisons with the preceding table are not possible because the 1963 data on types of support secured by recipients of one or two stipends had to be adapted to the typology of stipends employed in the earlier study. For a description of the typology see Davis (1962, pp. 59, 199).

or a decline (depending on the direction of change), then the behavioral sciences and the humanities showed the most extensive change in the character of stipend holding during the five-year interval, while the physical sciences were least affected. Our data suggest that even in the latter field, there has been an increase in the likelihood of holding an RA if support was received. On the other hand, stipend holders in the life sciences were more likely to have duty-free stipends in 1963 than in 1958 but were less likely to receive TA's as first or second stipends. Duty-free stipends declined somewhat in the behavioral sciences, and TA's declined substantially, but this was offset by the increasing likelihood of securing RA's. Each of the three shifts in rates in the two humanities fields was also substantial: while RA's increased, both duty-free stipends and TA's were less likely to be available to stipend holders in 1963 than in 1958.

TABLE 2.19

TYPES OF STIPENDS HELD AT TWO POINTS IN TIME
(AMERICAN GRADUATE STUDENTS IN SELECTED FIELDS)

(Per Cent Holding Various Types as Either
First or Second Stipend)

| Field of Study | Year | Type of Stipend | | | N |
|---|---|---|---|---|---|
| | | Duty Free | Research Assistant | Teaching Assistant | |
| Physical science. . . . . . | 1958 | 37 | 20 | 43 | 635 |
| | 1963 | 35 | 26 | 39 | 1,065 |
| Life science . . . . . . . | 1958 | 32 | 33 | 34 | 221 |
| | 1963 | 39 | 36 | 25 | 735 |
| Behavioral science . . . . | 1958 | 47 | 20 | 32 | 305 |
| | 1963 | 41 | 36 | 23 | 618 |
| Humanities . . . . . . . . | 1958 | 52 | 2 | 47 | 293 |
| | 1963 | 39 | 22 | 39 | 488 |

## Summary

This chapter has described stipend support for graduate study in five composite fields. The extent of stipend holding as well as the sources, types, and total dollar values of all stipends held by graduate students were analyzed and compared among the composite fields of life sciences, physical sciences, behavioral sciences, engineering, and the two humanities fields of history and English.

Field of study was the most important determinant of stipend holding, although other variables also were involved. Extent of stipend holding varied from a low of 46 per cent in the humanities to a high of 80 per cent in the life sciences, with an average rate of 66 per cent across all fields of study. About one out of five graduate students also held a second stipend.

The dominant type of support varied by field: scholarships in engineering; fellowships and research assistantships in the life and behavioral sciences; research and teaching assistantships in the physical sciences; and teaching assistantships in the humanities.

Over all five fields, about two-thirds of all stipends came from sources other than the Federal government, the most prominent single source being the university the student attends. In the life, physical, and behavioral sciences, however, more than one-third of the stipends did come from the various Federal agencies.

The median value of stipends ranged from a low of $2,000 in the humanities to a high of $2,700 in the life sciences.

Various academic and personal characteristics of the students affected the proportion holding stipends: students with higher grades, students in advanced stages of study, students without families, and students without jobs all held stipends more often than their opposite numbers. Stipend holding and employment appear to be alternative modes of financing a graduate education.

Comparing stipend holding in 1958 and 1963 on the basis of an earlier NORC study revealed only slight changes. The life and behavioral sciences had slightly higher rates in 1963, the physical sciences and humanities slightly lower rates. In all but the life sciences duty-free stipends were relatively less frequent than they were in 1958.

One aspect of graduate education thus far deferred concerns the relationship of enrollment patterns and stipend support; this will be considered in the next chapter.

CHAPTER 3

# ENROLLMENT FOR GRADUATE STUDY AND STIPEND SUPPORT

## Part-Time and Full-Time Study Patterns of Enrollment

According to a report issued by the President's Science Advisory Committee, one of the barriers to graduate education in engineering, mathematics, and physical science has been the limited stipend support available to students seeking the doctorate:

> Faced with a choice between a starting salary above $7,000 and a very much smaller stipend with graduate study, many highly qualified college graduates in EMP, especially those with family responsibilities and those who incurred debts as undergraduates, decide they cannot afford to select graduate education. And many who do undertake it now must extend their study over extra years by combining part-time study with part-time jobs, deferring their availability for full-time professional employment.
>
> Stipends for graduate study must be of sufficient number and size to attract more students into advanced training, and to allow more of them to undertake full-time instead of part-time graduate study with a correspondingly shortened interval to obtain a Ph.D. (President's Scientific Advisory Committee, 1962, p. 8).

In this chapter we report on some findings that provide additional bench marks for evaluating this recommendation. How many students in the sample were enrolled for part-time study in the sciences and engineering? What was the pattern of employment among part-time students? What did part-time students say it would take in the way of financial support to enable them to convert to full-time study?

### Measuring Part-Time Study

The structure of higher education at the graduate level lacks the coherence found at the lower strata of the educational system. Course requirements and the number of years of formal study vary from school to school; the number of courses a student holding a teaching assistantship may take varies by school; the proportions of research and formal course work vary from field to field as well as from school to school. Consequently, notions of what comprises full-time study are vague and difficult to transform into operational measures.[1]

Important policy questions have been raised concerning additional stipend support as a means for increasing the number of doctorate holders in certain scientific fields and in engineering. To meet the need for information bearing on this issue and to provide additional documentation for this aspect of graduate education, an attempt was made to identify students who were studying last spring on a "full-time" basis. An Enrollment Index was constructed employing the following items:[2]

1. Program of study, spring term, 1963

   Some 86 per cent of the students were enrolled in a program in which full-time study was possible. The remainder were enrolled in night school or some other program in which full-time study was impossible.

2. Course load, spring term, 1963

   Combining responses to two questions asking, "What is considered a full course load at your school and how

---

[1]Consider, for example, the definition of full-time/part-time employed in Office of Education surveys of enrollment for advanced degrees: "With respect to students enrolled for advanced degrees, a full-time [student] is one whose academic load--in terms of course work or other required activity (such as thesis)--is at least 75 per cent of that normally recommended for such students. Time spent by teaching fellows should be included only if such teaching is performed as a requirement for a degree. Employment which is not a part of the prescribed activity for an advanced degree should not be counted as part of the time spent on graduate work. A part-time student is one who is carrying an academic schedule lighter than that of a full-time student. (Note: the definitions in this paragraph are provided for guidance rather than rigid application.)" (Tolliver, 1963a, p. 478.) In the three Office of Education surveys for fall, 1960, 1962, and 1963, the proportion of students enrolled full time in all fields of study combined was about 40 per cent.

[2]These are items nos. 4, 6, and 7 of the questionnaire in Appendix 4.

many courses are you taking this term?"--33 per cent of the sample of American graduate students in the five fields said they were enrolled for a number of courses equal to or greater than that considered a full course load, while 67 per cent were enrolled for less than a full course complement at their schools.

3. Allocation of time for study, spring term, 1963

One-half of the students (50 per cent) gave an average of less than forty hours per week to study (including course work, thesis work, study time, etc.), and one-half averaged forty hours per week or more for study.

The three components of the index correlated as expected. According to Table 3.1a, some 37 per cent of the students who were enrolled in a program permitting full-time study were enrolled for courses that were equal to or greater in number than the full course load at their schools. In contrast, only 12 per cent of the students enrolled in night school or in a program that did not permit full-time study said that they were enrolled for a full course load. Table 3.1b shows that 59 per cent of the students enrolled in programs permitting full-time study were giving an average of forty hours or more to their academic activity, while 6 per cent of those enrolled in a night school, etc., were committing this amount of time to their study. The third panel of the table (3.1c) shows that, among students with a course load equal to or greater than a full course load at their schools, seven out of ten spent at least forty hours per week in study; among those with less than a full course load, however, only four out of ten averaged forty or more hours a week of study.

In constructing the Enrollment Index, each of the three variables was assigned a score as follows:

| Variable | Score | |
|---|---|---|
| | 1 | 0 |
| Program of study | Permits full-time study | Night school or full-time study impossible |
| Course load | Equal to or greater than full course load at the school | Less than full course load at the school |
| Hours of study per week | Forty hours or more | Less than forty hours |

TABLE 3.1

THE ENROLLMENT INDEX

(Type of Program and Course Load and Hours Studied Weekly)

| Type of Program | a) Per Cent Reporting a Course Load Equal to or Greater than That Required by the School | b) Per Cent Studying 40 Hours or More a Week |
|---|---|---|
| Program permitting full-time study | 37 (4,770) | 59 (4,863) |
| Night school or program in which full-time study is impossible | 12 (833) | 6 (891) |

| | | | |
|---|---|---|---|
| N . . . . . . . | 5,603 | N . . . . . . . | 5,754 |
| NA, program . . | 93 | NA, program . . | 108 |
| NA, course load | 214 | NA, hours . . . | 63 |
| NA, both . . . | 26 | NA, both . . . | 11 |
| Aliens . . . . | 878 | Aliens . . . . | 878 |
| Total N . . . | 6,814 | Total N . . . | 6,814 |

c) Course Load and Hours Studied Per Week

| Course Load | Per Cent Studying 40 or More Hours a Week |
|---|---|
| Course load is equal to or greater than that required by the school . . . . . . . . | 70 (1,897) |
| Course load is less than that required by the school . . . | 41 (3,755) |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . | 5,652 |
| NA, course load . . . . . . . | 210 |
| NA, hours . . . . . . . . . . . | 44 |
| NA, both . . . . . . . . . . . | 30 |
| Aliens . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

TABLE 3.1--Continued

d) Construction of the Enrollment Index

I. Distribution of Cases and Scores[a]

| Type of Program | Course Load | Hours of Study | |
|---|---|---|---|
| | | 40 or More a Week | Less Than 40 a Week |
| Permits full-time study | Equal to or greater than required | 1,317 (3) | 451 (2) |
| | Less than required | 1,461 (2) | 1,511 (1) |
| Full-time study not possible (night school, etc.) | Equal to or greater than required | 1 (2) | 103 (1) |
| | Less than required | 43 (1) | 675 (0) |

N . . . . 5,562

Assignment of cases for which there was partial information:

| | Score | N |
|---|---|---|
| Program permitting full-time study, 40 hours or more of study time . . . . . . . . . . . . . . . . . . . . . . | 2 | 70 |
| Program permitting full-time study, full course load or more . . . . . . . . . . . . . . . . . . . . . . . . | 2 | 6 |
| Night school, etc., more than 40 hours of study time . . . | 1 | 5 |
| Program permitting full-time study, less than 40 hours of study time . . . . . . . . . . . . . . . . . . . . | 1 | 26 |
| Night school, etc., less than 40 hours of study time . . . | 0 | 64 |
| Night school, etc., less than full course load . . . . . . | 0 | 16 |
| | | 187 |

II. Distribution of Scores

| Score | N | Per Cent |
|---|---|---|
| 3 | 1,317 | 23 |
| 2 | 1,989 | 35 |
| 1 | 1,688 | 29 |
| 0 | 755 | 13 |
| | 5,749 | 100 |

| | |
|---|---|
| NA, type of program . . . . . | 90 |
| NA, 2 out of 3 items . . . . . | 97 |
| Total . . . . . . . . . . . . . | 5,936 |
| Aliens . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . | 6,814 |

[a]Score is given in parentheses in each cell.

In each case, a score of zero indicated the likelihood of "part-time" enrollment. As shown in Table 3.1d, the Index has a range from 0 to 3, and each score included from 13 to 35 per cent of the cases. For the analyses reported here, full-time students are those who scored 2 or 3, while students scoring 0 or 1 are part time. When the Enrollment Index is used to classify the enrollment status in the spring of 1963 of American graduate students in the five composite fields, then 58 per cent were engaged in full-time study with the remainder studying part time.

## Enrollment by Field

Substantial field differences in the percentage of students engaged in full-time study were found. Table 3.2 shows that life science students were the most likely to be studying full time (72 per cent), followed by 64 per cent of the students in the behavioral sciences and 61 per cent of those in the physical sciences. One-half (50 per cent) of the students in the humanities were full-time students as measured by the Enrollment Index, and only a minority (40 per cent) of the engineering graduate students were enrolled for full-time work. Enrollment statistics reported in the Office of Education survey are also given in the table.[3] Differences in definition notwithstanding, the distribution of students engaged in full-time study in the five composite fields showed close correspondence from one survey to another, with the exception of the behavioral sciences, where the difference in proportions of full-time students was nine percentage points.

## Field, Enrollment, and Stipend Holding

Some 82 per cent of the graduate students in the five composite fields who were full-time students during the 1962-63 spring term received stipends, while only 47 per cent of those in part-time study did so. Field differences held up even when enrollment status was taken into

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[3] Tolliver (1963b, Table 13, pp. 26-29). Relevant fields of study were reclassified according to the five composite fields employed in the present survey to ensure comparability.

consideration; nine out of ten full-time students in life sciences held a stipend in contrast with two out of three humanities students of similar enrollment status. About as many part-time students in the life sciences held stipends as did full-time students in the humanities (Table 3.3). The fields maintained their rank order in the percentage holding stipends, so that part-time students in the humanities were least likely to have this form of support (32 per cent).

TABLE 3.2

FULL-TIME ENROLLMENT FOR ADVANCED DEGREES (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS, 1960 AND 1963)

(Per Cent Enrolled Full Time)

| Composite Field of Study | Survey: Office of Education Survey of Enrollment for Advanced Degrees, First Term 1962-1963[a] | Survey: NORC Survey of Graduate Student Finances | |
|---|---|---|---|
| Life science . . . . | 66 | 72 | (972) |
| Engineering . . . . | 40 | 40 | (1,291) |
| Physical science . . | 59 | 61 | (1,561) |
| Behavioral science . | 55 | 64 | (1,037) |
| Humanities . . . . . | 48 | 50 | (888) |

| | |
|---|---|
| N . . . . . . . . . | 5,749 |
| NA, enrollment. . | 187 |
| Aliens. . . . . . . | 878 |
| Total N . . . . | 6,814 |

[a]Tolliver (1963b, Table 13, pp. 26-29).

TABLE 3.3

FIELD OF GRADUATE STUDY, ENROLLMENT STATUS, AND STIPEND HOLDING
(AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Stipends)

| Composite Field of Study | Enrollment | |
|---|---|---|
| | Full Time | Part Time |
| Life science | 89 (695) | 62 (277) |
| Physical science | 88 (954) | 54 (606) |
| Engineering | 83 (519) | 48 (770) |
| Behavioral science | 77 (661) | 42 (376) |
| Humanities | 64 (447) | 32 (440) |
| Total, five fields | 82 (3,276) | 47 (2,469) |

| | |
|---|---|
| N | 5,745 |
| NA, enrollment or stipend | 191 |
| Aliens | 878 |
| Total N | 6,814 |

## Type of First Stipend

When full-time students held stipends, their first stipends were most likely to be fellowships (36 per cent). Close to three out of ten (29 per cent) of the stipend holders among the full-time students held research assistantships (RA's), another 27 per cent held teaching assistantships (TA's), and less than one out of ten (8 per cent) received stipends in the form of scholarships.[4] On the other hand, stipend holders among part-time students were most likely to be recipients of

[4]Certain graduate schools do not permit students with RA's and TA's to enroll for full course loads. Such students would be classified as full time on the basis of the Enrollment Index only if they were at schools in which full-time study was possible and they were averaging at least forty hours a week on academic work (dissertations, language requirements, comprehensive exams, and the like).

scholarships that covered part or all of their tuition but provided no cash grant for living expenses. Three out of ten were TA's, another two out of ten were RA's, and only 12 per cent held fellowships as their first stipends (Table 3.4).

TABLE 3.4

COMPOSITE FIELD OF STUDY, ENROLLMENT STATUS, AND TYPE OF FIRST STIPEND (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Holding Various Types of Stipends among Stipend Holders)

| Composite Field of Study | Enrollment Status | Type of First Stipend | | | | Total | N |
|---|---|---|---|---|---|---|---|
| | | Scholar-ship | Fellow-ship | RA | TA | | |
| Life science . . . | Full time | 5 | 37 | 37 | 22 | 101 | 604 |
| | Part time | 19 | 22 | 29 | 31 | 101 | 170 |
| Physical science . | Full time | 4 | 31 | 30 | 36 | 101 | 833 |
| | Part time | 35 | 11 | 16 | 38 | 100 | 320 |
| Engineering . . . | Full time | 14 | 39 | 30 | 17 | 100 | 428 |
| | Part time | 58 | 11 | 16 | 15 | 100 | 357 |
| Behavioral science | Full time | 7 | 41 | 32 | 21 | 101 | 500 |
| | Part time | 23 | 13 | 32 | 32 | 100 | 154 |
| Humanities . . . . | Full time | 17 | 36 | 9 | 39 | 99 | 279 |
| | Part time | 36 | 8 | 7 | 48 | 99 | 135 |
| Total, five fields . . . . | Full time | 8 | 36 | 29 | 27 | 100 | 2,644 |
| | Part time | 38 | 12 | 19 | 30 | 99 | 1,136 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 3,780 |
| No stipend or NA . . . . . | 2,156 |
| Aliens . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

The highest percentage of scholarships among full-time stipend holders occurred in the humanities (17 per cent; this form of support went least frequently to the physical science stipend holders of similar enrollment status (4 per cent). Part-time students with scholarships were most frequently found among engineering stipend holders (58 per cent) and least frequently among those in life sciences (19 per cent). Field differences in fellowship support among full-time students with stipends were modest, ranging from a high of 41 per cent in the behavioral sciences to a low of 31 per cent in the physical sciences. Even 22 per cent of the life science stipend holders enrolled on a part-time basis, as opposed to 8 per cent of those in the humanities, held fellowships as their first stipends.

As for field differences involving duty stipends, the humanities were at the top or the bottom, depending on the type of stipend held. Both full-time and part-time stipend holders in the humanities were least likely of students in any of the fields to hold an RA (9 per cent and 7 per cent respectively), and they were most likely to be holding a TA (39 per cent and 48 per cent respectively). Some 37 per cent of the life science full-time students holding stipends were RA's; behavioral sciences had the highest proportion of part-time students performing research duties (32 per cent). Both full- and part-time students in engineering received TA's least frequently (32 per cent of the full-time and 15 per cent of the part-time students).

## Source of First Stipend

Close to four out of ten full-time students with stipends secured their support from the Federal government, while only one out of four (23 per cent) part-time students had such support (Table 3.5). About 11 per cent of the full-time stipend holders identified their source as the National Science Foundation (NSF), and 12 per cent a Public Health Service (PHS) program or agency. Seven per cent of the part-time students mentioned NSF, and 4 per cent PHS.

Six out of ten stipend holders studying on a full-time basis identified a non-Federal source, the percentage increasing to 77 for the part-time stipend holders. Some 46 per cent of the former and 42 per cent of the latter identified their schools as the source (this included the recipients who were uncertain of the donor but knew that the school was administering the program).

TABLE 3.5

FIELD OF STUDY, ENROLLMENT, AND SOURCE OF FIRST STIPEND (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Receiving Stipends from Various Sources among Stipend Holders)

| Composite Field of Study | Enrollment | Source of First Stipend | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | National Science Foundation | Public Health Service | All Other Federal Gov't | Total Federal Gov't | All School Sources | Business Firm or Corp. | Other | Total Non-Federal Gov't | Total | N |
| Life science . | Full time | 15 | 25 | 8 | 48 | 41 | 2 | 9 | 52 | 100 | 604 |
| | Part time | 18 | 15 | 4 | 37 | 48 | 4 | 11 | 63 | 100 | 170 |
| Physical science . | Full time | 16 | 4 | 20 | 41 | 49 | 5 | 6 | 59 | 100 | 833 |
| | Part time | 14 | 2 | 12 | 27 | 43 | 22 | 8 | 73 | 100 | 320 |
| Engineering . . . | Full time | 11 | 4 | 23 | 38 | 40 | 14 | 8 | 62 | 100 | 428 |
| | Part time | 2 | 1 | 16 | 19 | 22 | 52 | 6 | 81 | 100 | 357 |
| Behavioral science . | Full time | 6 | 22 | 14 | 42 | 43 | 1 | 12 | 57 | 99 | 500 |
| | Part time | 1 | 10 | 13 | 23 | 55 | 5 | 16 | 77 | 100 | 154 |
| Humanities . . | Full time | - | - | 13 | 13 | 67 | - | 20 | 87 | 100 | 279 |
| | Part time | - | 1 | 4 | 4 | 68 | 3 | 25 | 96 | 100 | 135 |
| Total, five fields . . | Full time | 11 | 12 | 16 | 39 | 46 | 4 | 10 | 60 | 99 | 2,644 |
| | Part time | 7 | 4 | 11 | 23 | 42 | 24 | 11 | 77 | 100 | 1,136 |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . . | 3,780 |
| NA, type . . . . . . . . . . . . | 78 |
| NA, enrollment . . . . . . . . . | 187 |
| NA, stipend, not applicable . . . | 1,891 |
| Aliens . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . . | 6,814 |

Major differences in source of non-Federal stipends were seen in business and industry: 4 per cent of the full-time students and 24 per cent of the part-time students received support from this source.

Some 48 per cent of the full-time and 37 per cent of the part-time life science stipend holders received Federal support. More than four out of ten full-time stipend holders in the physical and behavioral science fields also secured their stipends from a Federal source. Among full-time students in engineering, 38 per cent had Federal stipends, compared with only 13 per cent of the full-timers in the humanities.

Widespread field differences also obtain among part-time students. As mentioned above, life science ranked highest and humanities lowest (only 4 per cent in the latter field holding stipends received them from a Federal source). PHS supported one-quarter of the full-time stipend holders in the life sciences, 22 per cent in the behavioral sciences of similar enrollment status, and 15 per cent of the part-time students with stipends in the life sciences. NSF provided support to 15 per cent of the full-time and 18 per cent of the part-time stipend holders in the life sciences. NSF was also the source of 16 per cent of the first stipends held by full-time students with stipends in the physical sciences, and 14 per cent of the first stipends of part-time students in the same field. In engineering 11 per cent of those who were studying full time and 2 per cent of those part time with stipend support received their first stipends from NSF.

University support ranged from a high of 68 per cent among part-time stipend holders in the humanities to a low of 22 per cent among part-time stipend holders in engineering. Among the full-time students with university-administered stipends, humanities again ranked at the top--67 per cent, as compared with 40 per cent among engineering students. The bulk of business and industrial stipend support was channeled into engineering: fully 52 per cent of all part-time and 14 per cent of all full-time students with stipends in this field secured their assistance from this source. The remainder went to the physical sciences--5 per cent of the full-time students and 22 per cent of the part-time students in this field secured their stipends from business or industry.

## Some Correlates of Enrollment Status

We have shown that two things account for much of the variation in stipend holding: field of study and enrollment status. Furthermore, in each field the types of stipends secured and the agencies providing the stipends were easily differentiated by introducing enrollment status as a control variable. In this section additional information is presented on some of the conditions that account for differences in enrollment status.

### Field and Stage of Study

Table 3.6 shows that the proportion of full-time students in the sample increased with just about every successive advance in graduate study. Less than one-half of the students (49 per cent) in the sample who were in Stage I (having completed less than a year of graduate study) were enrolled full time, but among advanced students working for the doctorate and writing dissertations (Stage IV) over three out of four (78 per cent) were full time.

At the extremes, only 32 per cent of Stage I students in engineering were full time as compared to 83 per cent of the Stage IV students in the life and physical sciences. Within each field there was a steady increase in the proportion of full-time students, and the field differences at each stage steadily decreased with each successive advance in the program of the study. At Stage I, some thirty percentage points separated the highest field (life sciences) from the lowest field (engineering), but at Stage IV the percentage difference was reduced to fifteen points (life sciences--83 per cent full time; behavioral sciences--68 per cent full time). Field differences in full-time enrollment from Stage I to Stage IV were also considerable: percentage differences were slightest in behavioral sciences, where only seven percentage points separated Stage I from Stage IV in the proportion studying full time; in life sciences there was a 21 per cent difference; and so on. The most striking increase occurred in engineering: there was a more than twofold increase in the percentage engaged in full-time study from the first to the final stages of graduate study.

TABLE 3.6

STAGE OF STUDY, FIELD, AND ENROLLMENT STATUS (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Enrolled Full Time)

| Composite Field of Study | Stage of Study | | | |
|---|---|---|---|---|
| | I | II | III | IV |
| Life science . . . . . | 62 (328) | 72 (225) | 74 (69) | 83 (266) |
| Physical science . . . | 53 (548) | 53 (339) | 59 (1.85) | 83 (404) |
| Engineering . . . . . | 32 (604) | 36 (286) | 49 (132) | 72 (181) |
| Behavioral science . . | 61 (370) | 65 (189) | 70 (192) | 68 (197) |
| Humanities . . . . . . | 44 (396) | 48 (187) | 67 (131) | 71 (84) |
| Total, five fields . | 49 (2,246) | 54 (1,226) | 63 (709) | 78 (1,132) |

| | |
|---|---|
| N . . . . . . . . . . . . | 5,313 |
| NA, enrollment . . . . | 187 |
| NA, stage of study . . | 436 |
| Aliens . . . . . . . . . | 878 |
| Total N . . . . . . . . | 6,814 |

Field and Current Grade Point Average

In addition to the increase in full-time enrollment as students progressed in their graduate study, as shown above, Table 3.7 indicates that students reporting a current grade point average (GPA) of A or A- were also more frequently enrolled as full-time students than those having course work graded below B+; 64 per cent of the top students and only 46 per cent of those performing at the B level or below were enrolled on a full-time basis in the 1963 spring term. This relationship was found in each of the five fields of study, but the trend was especially pronounced in the humanities, engineering, and the physical sciences. In the physical sciences, for example, 70 per cent of those with a current GPA of A or A-, but only 47 per cent of those scoring below B+, were full-time students. The relationship was weaker in the behavioral sciences and negligible in the life sciences. In the latter, for example, 73 per cent of those averaging A or A- were full time, but so too were 69 per cent of those averaging B or less. Engineering showed the lowest rate of full-time enrollment for A or A- students (50 per cent), and among engineers who averaged B or less, the rate of full-time enrollment dropped lowest of all (28 per cent). Thus the poorest students in the life sciences were much more likely to be enrolled for full-time study than the best students in the humanities and engineering.

TABLE 3.7

FIELD OF STUDY, GRADE POINT AVERAGE, AND ENROLLMENT STATUS
(AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Enrolled Full Time)

| Field of Study | Grade Point Average | | | | | |
|---|---|---|---|---|---|---|
| | A, A- | | B+ | | B or Less | |
| Life Science | 73 | (356) | 73 | (328) | 69 | (264) |
| Behavioral science | 68 | (464) | 62 | (345) | 59 | (207) |
| Physical science | 70 | (571) | 65 | (440) | 47 | (504) |
| Humanities | 59 | (374) | 51 | (271) | 33 | (192) |
| Engineering | 50 | (522) | 38 | (387) | 28 | (341) |
| Total, five fields | 64 | (2,287) | 58 | (1,771) | 46 | (1,508) |

| | |
|---|---|
| N | 5,566 |
| NA, enrollment | 187 |
| NA, GPA | 183 |
| Aliens | 878 |
| Total N | 6,814 |

With the three academic variables--field of study, stage of study, and current GPA--put together, Table 3.8 shows that academic performance made a difference in the likelihood of full-time enrollment after field and stage of study were taken into account. The poorest advanced students in the sample were full time more frequently (65 per cent) than the best students in the early phases (55 per cent). Again, field differences were paramount: even the poorest life science students in early stages were full time more frequently (68 per cent) than the very best engineering students (40 per cent). The graduate student having all three "favorable" attributes (study in life sciences, advanced stage of study, and a high current GPA) was enrolled full time in eight cases out of ten; conversely, the beginning student in engineering with a low GPA was enrolled full time in only one case out of four.

Among students in advanced stages of study, field differences in full-time enrollment generated a spread of eighteen percentage points between the top and bottom ranking fields for students with a GPA of A or A-; among the B+ students, the spread increased to thirty-three points (separating engineering from life sciences), and the differences were of the order of thirteen percentage points among the poorest students in these fields at advanced stages of study. For the beginning students, on the other hand, the gap between fields steadily increased with each step down in academic performance, the spreads being twenty-two, thirty-five and forty-one percentage points respectively. In effect, the heavily supported fields had students in full-time enrollment at early stages of study even when these students were performing below the level attained by a majority of their peers.

Stipend Holding

In Table 3.8 well over one-half of the top (i.e., current GPA B+ or better) students in early stages of study in engineering and the humanities were enrolled for graduate study on a part-time basis. In physical sciences four out of ten of the students in the early stages (I and II) with top grades were part time as measured by the Index of Enrollment. If the nation's supply of manpower with doctorates in these fields is to be significantly increased in the near future, then it may

TABLE 3.8

FIELD OF STUDY, STAGE OF STUDY, CURRENT GRADE POINT AVERAGE, AND ENROLLMENT STATUS (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Enrolled Full Time)

| Composite Field of Study | Stage of Study Index[a] | | | | | |
|---|---|---|---|---|---|---|
| | Beginning | | | Advanced | | |
| | Current Grade Point Average | | | | | |
| | A, A- | B+ | B or Less | A, A- | B+ | B or Less |
| Life science . . | 62 (176) | 68 (170) | 68 (187) | 84 (148) | 89 (118) | 73 (59) |
| Behavioral science . . . . | 66 (212) | 60 (190) | 60 (141) | 73 (208) | 64 (130) | 67 (48) |
| Physical science | 61 (256) | 59 (246) | 35 (351) | 79 (286) | 80 (178) | 62 (117) |
| Humanities . . . | 52 (210) | 48 (169) | 33 (157) | 75 (129) | 60 (70) | * (13) |
| Engineering . . | 40 (299) | 33 (264) | 27 (289) | 66 (191) | 56 (97) | 60 (25) |
| Total, five fields . . . . | 55 (1,151) | 52 (1,039) | 44 (1,125) | 76 (962) | 70 (603) | 65 (263) |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . | 5,143 |
| NA, enrollment . . . . . . . . . . | 187 |
| NA, others (GPA=170; stage=436) . | 606 |
| Aliens . . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . . . | 6,814 |

*Equals less than one-half of 1 per cent.

[a]Beginning = Stages I and II; advanced = Stages III and IV.

well be that stipends will enable many students in the above categories to engage in full-time graduate study. To test this notion, the data were re-analyzed with stipend holding introduced as an additional control variable. The results are presented in Table 3.9.

> <u>The best predictor of full-time enrollment is whether a graduate student holds a stipend.</u> Controlling for academic stage and GPA, rates of full-time study are at least twice as high for stipend holders as for others. Among stipend holders, stage of study and GPA both make a difference, with the former more influential. Among advanced students without stipend support, GPA makes a slight difference. No pattern was found among the beginning students in full-time enrollment.

The effects of stipend holding were maintained for every field, but there were some variations by field in the pattern of full-time enrollment:

> <u>Life sciences</u>--Among the stipend holders, stage of study and current GPA still make a difference in full-time enrollment. Within each academic category, however, stipend holders are about twice as likely as their counterparts without stipends to be in full-time study. Among students in early stages of study, only stipend holding influences full-time enrollment. It is interesting to note that there were too few students in advanced study without stipends to make comparisons.

> <u>Physical sciences</u>--The rate of full-time study was at least twice as high for stipend holders as for students without this form of support in every academic category. The pattern is similar to that found in the life sciences. As a result, the lowest GPA students in early stages of study with stipend support were more frequently (54 per cent) enrolled full time than the highest GPA, advanced stage students who lacked stipends (37 per cent).

TABLE 3.9

FIELD OF STUDY, STIPEND HOLDING, STAGE OF STUDY, CURRENT GRADE POINT AVERAGE, AND ENROLLMENT STATUS (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Enrolled Full Time)

| Composite Field of Study | Stipend Holding | Stage of Study Index | | | | | |
|---|---|---|---|---|---|---|---|
| | | Beginning | | | Advanced | | |
| | | Current Grade Point Average | | | | | |
| | | A, A- | B+ | B or Less | A, A- | B+ | B or Less |
| Physical science . . | Yes | 68 (201) | 69 (177) | 54 (220) | 85 (251) | 88 (147) | 72 (92) |
| | No | 29 (55) | 33 (69) | 23 (131) | 37 (35) | 29 (24) | 28 (25) |
| Engineering . | Yes | 53 (190) | 44 (140) | 39 (160) | 74 (156) | 65 (74) | 64 (22) |
| | No | 16 (109) | 22 (123) | 12 (129) | 34 (35) | 26 (23) | - [3][a] |
| Life science | Yes | 68 (146) | 78 (127) | 76 (143) | 87 (134) | 86 (113) | 75 (53) |
| | No | 36 (28) | 37 (43) | 45 (44) | - [14] | - [15] | - [6] |
| Behavioral science . . | Yes | 77 (145) | 68 (108) | 82 (62) | 83 (167) | 72 (94) | 85 (34) |
| | No | 42 (67) | 48 (82) | 42 (79) | 34 (41) | 42 (36) | [14] |
| Humanities . | Yes | 70 (97) | 62 (72) | 41 (44) | 79 (106) | 71 (49) | - [7] |
| | No | 37 (113) | 36 (96) | 30 (113) | 56 (23) | 33 (21) | - [7] |
| Total, five fields . . | Yes | 66 (779) | 64 (624) | 57 (629) | 82 (814) | 78 (484) | 74 (208) |
| | No | 31 (372) | 34 (413) | 27 (496) | 40 (148) | 36 (119) | 31 (55) |

| | |
|---|---|
| N . . . . . . . . . . | 5,141 |
| NA, enrollment . . | 187 |
| NA, other . . . . . | 608 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . | 6,814 |

[a]Indicates base is too small to percentage.

Behavioral sciences.--Again, stipend holders attended graduate school on a full-time basis more frequently than the others in every stage and GPA classification, but, unlike the above two fields, there was no relationship between full-time attendance and stage or GPA.

Humanities.--Stipend holders in every category were much more likely to be full-time students. In the humanities, students with better grades attended full time more frequently than others; academic stage also made a difference, the more advanced students being more likely to be full-time attenders.

Engineering.--The rates of full-time enrollment were as sensitive to stipend holding in this field as they were in the other four composite fields of study. Both stage of study and GPA contributed to differences in full-time enrollment when the effects of stipends were taken into account, resulting in a range from a low of 12 per cent full time among B or B- beginning students, to a high of 74 per cent among A or A- students in advanced study.

These findings are useful in assessing the potential for moving part-time students into full-time graduate study provided that stipend support is available. If students with GPA's of A or A- currently studying part time comprise the reservoir of talent particularly requiring motivation for commitment to full-time study, then Table 3.9 suggests that increased stipend support is the answer. Indeed, increased stipend support should raise rates of full-time enrollment at all stages of graduate study. However, an infusion of stipends into these graduate fields of study may be limited in effectiveness; note that even among stipend holders in early stages of graduate study, rates of full-time enrollment range from a high of 78 per cent in the behavioral sciences to a low of 44 per cent in engineering. Does the lack of stipends account for the finding that only one in two stipend holders in this academic category of engineering students studied full time last spring? Perhaps nonacademic factors such as family role and the pattern of nonstipend employment should be considered as well.

Field and Family Role

Knowing that a majority of the sample was married, and that a substantial minority of the men and women enrolled for graduate study in the spring of 1963 had at least one child as well, there was good reason to expect that full-time study also depended on the family role of the graduate student. And it did. Table 3.10 shows that bachelors were most likely to be full time (68 per cent), followed by husbands (65 per cent), and then fathers (47 per cent). Single and married women, however, were enrolled full time to the same extent (over one-half in each case), but mothers were least likely of all to be studying full time at the time of the survey (only 31 per cent).

Consider, however, the field differences among the men: in each field fathers were less likely than bachelors or husbands to be enrolled full time, but fathers working for advanced degrees in the life sciences were more likely to be full-time students than bachelors in engineering. Field of study was important in shaping the chances of studying full time despite the overall relationship between family role and enrollment status. This held true for women as well as men. In each field mothers were less likely to be full time than other female students, but mothers in the life sciences were full time more frequently than single women in the humanities or physical sciences.

The influence of field is further noted when the following is considered: within each family role category, women were less likely to be full-time students than men in that field, but all the women in the life science fields were slightly more likely to be enrolled full time than were their male counterparts in the humanities or engineering.

TABLE 3.10

FIELD OF STUDY, FAMILY ROLE, AND ENROLLMENT STATUS (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Enrolled Full Time)

| Composite Field of Study | Life Role | | | | | |
|---|---|---|---|---|---|---|
| | Men | | | Women | | |
| | Bachelor | Husband | Father | Single | Wife | Mother |
| Life science . . | 79 (275) | 80 (146) | 67 (297) | 65 (130) | 80 (30) | 56 (68) |
| Behavioral science . . . . | 71 (270) | 73 (188) | 57 (328) | 71 (126) | 60 (38) | 28 (54) |
| Physical science | 74 (565) | 67 (308) | 50 (513) | 49 (107) | 52 (23) | 18 (28) |
| Humanities . . . | 64 (245) | 74 (105) | 45 (181) | 43 (185) | 45 (62) | 18 (78) |
| Engineering . . | 52 (382) | 43 (242) | 32 (646) | - [1][a] | - [2] | - [2] |
| Total, five fields . . . . | 68 (1,737) | 65 (989) | 47 (1,965) | 56 (549) | 57 (155) | 31 (230) |

| | |
|---|---|
| N . . . . . . . . . . . | 5,625 |
| NA, enrollment . . . | 187 |
| NA, life role . . . . | 124 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

[a]Indicates base is too small to percentage.

## Field and Nonstipend Employment

Having shown that full-time students received some form of stipend support nearly twice as frequently as part-time students, it is to be expected that enrollment status and the employment experience reported by the students would also be interdependent. According to Table 3.11, less than one-half (47 per cent) of the full-time students in the sample were employed, whereas close to four-fifths (78 per cent) of the part-time students took some form of nonstipend employment. Full-time life science students were least likely (35 per cent) to have been employed, while 62 per cent of the full-time engineering students reported some form of employment. Among the part-time students, the percentages ranged from 68 in the life sciences to 88 in engineering. While the range in percentage differences among part-time students in the high and low fields was somewhat reduced in comparison with differences occurring among full-time students, it was substantial nonetheless. Almost as many full-time students in engineering reported nonstipend employment as did part-time students in the life sciences.

Furthermore, level of enrollment for academic study was influenced by hours of work per week. The second panel of Table 3.11 shows the percentage employed on a full-time regular basis, i.e., thirty-five or more hours per week for ten or more months during the year. Only 5 per cent of the students enrolled for full-time study also maintained full-time regular employment; these highly energetic individuals were fairly evenly distributed by field of study. Among the students enrolled on a part-time basis, however, we see that some 50 per cent had full-time regular employment. This type of employment was especially prevalent among engineering students; 69 per cent were full-time workers most of the calendar year, as were close to one-half (47 per cent) of the part-time students in the physical sciences. In the life sciences, however, only three part-time students out of ten had full-time regular employment.

To summarize, stipend-holding made a substantial difference in the rates of full-time enrollment in the five composite fields of graduate study, but family roles and nonstipend employment--including work on a full-time basis throughout the year--also were important correlates of full-time attendance. Since the fields varied in the proportion of their graduate students in full-time regular employment, and also in the extent to which students were responsible for the economic welfare of spouses and children, we should assess the limits that extra-academic roles may impose on a policy of stipend support aimed at increasing the number of full-time graduate students in these fields of study.

TABLE 3.11

FIELD OF STUDY, ENROLLMENT STATUS, AND EMPLOYMENT (AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent in Employment Category)

| Composite Field of Study | Enrollment Status | Employment: Any Type of Nonstipend Employment | Employment: Regular Full-Time Employment | N |
|---|---|---|---|---|
| Life science . . . . | Full time | 35 | 5 | 695 |
| | Part time | 68 | 31 | 276 |
| Physical science . . | Full time | 43 | 3 | 954 |
| | Part time | 75 | 47 | 606 |
| Humanities . . . . . | Full time | 47 | 3 | 447 |
| | Part time | 75 | 40 | 439 |
| Behavioral science . | Full time | 52 | 4 | 661 |
| | Part time | 75 | 41 | 376 |
| Engineering . . . . | Full time | 62 | 8 | 518 |
| | Part time | 88 | 69 | 769 |
| Total, five fields | Full time | 47 | 5 | 3,275 |
| | Part time | 78 | 50 | 2,466 |

| | |
|---|---|
| N . . . . . . . . . . . | 5,741 |
| NA, enrollment . . . | 187 |
| NA, employment . . . | 8 |
| Aliens . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

## Readiness for Full-Time Study

### Field of Study

To measure the availability of graduate students for full-time study, the questionnaire included the following item:

"What is the least it would take to get you into graduate studies full-time?"

Students classified as part-time on the basis of the Enrollment Index answered as follows:

| | Per Cent |
|---|---|
| Tuition scholarship . . . . . . . . . . . . . . . . . . . . . . . . | 1 |
| Tuition scholarship plus $500 stipend with no obligations . . | 1 |
| Tuition scholarship plus $1,000 stipend with no obligations . | 4 |
| Tuition scholarship plus $2,000 stipend with no obligations . | 14 |
| Tuition scholarship plus $3,000 stipend with no obligations . | 14 |
| Tuition scholarship plus $4,000 stipend with no obligations . | 22 |
| None of the above . . . . . . . . . . . . . . . . . . . . . . . . | 44 |

We see that over one-half (56 per cent) of the students classified as part-time attenders in spring, 1963, would enroll on a full-time basis provided that stipend support in the form of scholarships and cash grants of specific amounts were to become available to them. Tuition scholarships plus duty-free cash grants with a value of less than $2,000 would barely make a dent; only 6 per cent circled anything less than this sum. Some 14 per cent of these part-time students would study full time provided a $2,000 fellowship came their way; another 14 per cent could be recruited to full-time study provided the cash value of the stipend amounted to $3,000; and over one out of five (22 per cent) of those studying part time at the time of the survey would be enrolled full time if the cash grant amounted to $4,000. On the face of it, substantial numbers of part-time students expressed willingness to study full time if somebody was willing to offer support in the form of cash grants up to $4,000. Presumably, even more part-time students could be induced to study full time if the sum was set higher than $4,000.

There are important field differences, however, in the readiness to undertake full-time study under the conditions set forth (Table 3.12). Over one-half (52 per cent) of those in engineering would not consider full-time study even with stipends offering cash grants of $4,000, nor would 44 per cent of physical science students or 43 per cent of those in the behavioral sciences. Proportionately fewer students in humanities and life sciences indicated reluctance to engage in full-time study--36 per cent among the former and 31 per cent among the latter. Further, engineering students were the least inclined to study full time if the stipend amount was $2,000 or less (15 per cent), while part-time students in the humanities were most likely (29 per cent) to be so inclined.

TABLE 3.12

FIELD OF STUDY AND STIPEND REQUIREMENTS FOR FULL-TIME ENROLLMENT (PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Requiring Stipends in Various Amounts)

| Composite Field of Study | Stipend Required for Full-Time Enrollment | | | | | | |
|---|---|---|---|---|---|---|---|
| | Tuition Expenses and Cash Grant Amounting To . . . | | | | None of the Above Would Get Me To Go Full Time | Total Per Cent | N |
| | Less than $2,000 | $2,000 | $3,000 | $4,000 | | | |
| Physical science . . | 5 | 14 | 14 | 23 | 44 | 100 | 496 |
| Engineering. | 4 | 11 | 10 | 24 | 52 | 101 | 690 |
| Life science | 5 | 16 | 23 | 25 | 31 | 100 | 214 |
| Behavioral science . . | / | 18 | 13 | 19 | 43 | 100 | 308 |
| Humanities . | 14 | 15 | 16 | 20 | 36 | 101 | 377 |
| Total, five fields . . | 6 | 14 | 14 | 22 | 44 | 100 | 2,085 |

| | |
|---|---|
| N . . . . . . . . . . . . . . . . | 2,085 |
| NA, amount . . . . . . . . . . . | 358 |
| NA, enrollment . . . . . . . . . | 187 |
| Full time: not applicable . . | 3,306 |
| Aliens . . . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . . . | 6,814 |

## Field and Family Role

Family role was found to be the most important factor in addition to field of study in determining willingness of the part-time student to undertake full-time study if stipends with a cash value of up to $4,000 were made available. Table 3.13 shows that bachelors in the sample were most likely and fathers least likely to be ready to study full time with stipend support (see panel [f] of this table). Across the board, readiness for full-time study decreased with each step into the web of family involvement: among both men and women the percentage of students saying "none of the above" to a stipend of at least $4,000 for full-time study increased when bachelors were compared with spouses, and spouses were compared with parents. Thus 27 per cent of the single men but 54 per cent of the fathers were reluctant to study full time under the conditions of stipend support set by the questionnaire item. And 33 per cent of the single women as compared with 57 per cent of the mothers also indicated unwillingness to enter full-time study for their graduate degree even if this form of support were forthcoming.

Furthermore, the amount necessary to recruit these part-time students to full-time study depended on their family roles. Some 60 per cent of the bachelors would study full time if stipends with a value of less than $4,000 were offered, but only 16 per cent of the fathers in the sample would do so. Similarly, more single women than mothers would study full time under these conditions, and twice as many mothers as fathers would study full time if the lesser amount (i.e., under $4,000) were made available. In effect, both the amount of money needed for full-time study and willingness to undertake such study were determined to a large degree by the part-time graduate student's family role.

Substantial field differences persisted among student-fathers. The percentage of fathers in each of the fields saying "none of the above" to stipends with values of at least $4,000 ranged from a high of 62 per cent among those in engineering down to only 36 per cent among those in the humanities. This difference by field in the readiness of fathers in part-time study to consider full-time enrollment undoubtedly reflects the salary structure available in each of the fields for those who are employed on a full-time regular basis.

TABLE 3.13

FIELD OF STUDY, FAMILY ROLE, AND STIPEND REQUIREMENTS FOR FULL-TIME ENROLLMENT
(PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS)

(Per Cent Requiring Stipends in Various Amounts)

| Composite Field of Study | Family Role | | Stipend Required for Full-Time Enrollment: Tuition Expenses and Cash Grant Amounting To . . . Less than $4,000 | $4,000 | None of the Above Would Get Me To Go Full Time | Total Per Cent | N |
|---|---|---|---|---|---|---|---|
| a) Engineering . . | Men: | Bachelor | 52 | 15 | 33 | 100 | 160 |
| | | Husband | 34 | 25 | 41 | 100 | 125 |
| | | Father | 11 | 27 | 62 | 100 | 399 |
| | Women: | Single | * | * | * | * | 1 |
| | | Wife | 0 | 0 | 0 | 0 | 0 |
| | | Mother | * | * | * | * | 2 |
| b) Physical science . . . | Men: | Bachelor | 64 | 11 | 25 | 100 | 97 |
| | | Husband | 37 | 23 | 41 | 101 | 89 |
| | | Father | 16 | 31 | 53 | 100 | 228 |
| | Women: | Single | 46 | 11 | 43 | 100 | 46 |
| | | Wife | * | * | * | * | 6 |
| | | Mother | 18 | 23 | 59 | 100 | 22 |
| c) Life science . | Men: | Bachelor | 77 | 5 | 19 | 101 | 40 |
| | | Husband | 66 | 17 | 17 | 100 | 21 |
| | | Father | 18 | 39 | 43 | 100 | 85 |
| | Women: | Single | 69 | 13 | 18 | 100 | 42 |
| | | Wife | * | * | * | * | 3 |
| | | Mother | * | * | * | * | 16 |

TABLE 3.13--Continued

| Composite Field of Study | Family Role | | Stipend Required for Full-Time Enrollment: Tuition Expenses and Cash Grant Amounting To . . . Less than $4,000 | $4,000 | None of the Above Would Get Me To Go Full Time | Total Per Cent | N |
|---|---|---|---|---|---|---|---|
| d) Behavioral science . . . | Men: | Bachelor | 61 | 17 | 22 | 100 | 57 |
| | | Husband | 52 | 15 | 33 | 100 | 39 |
| | | Father | 20 | 28 | 52 | 100 | 118 |
| | Women: | Single | 52 | 18 | 30 | 100 | 34 |
| | | Wife | * | * | * | * | 10 |
| | | Mother | 27 | 3 | 70 | 100 | 36 |
| e) Humanities . . | Men: | Bachelor | 62 | 10 | 28 | 100 | 72 |
| | | Husband | 54 | 14 | 32 | 100 | 22 |
| | | Father | 30 | 34 | 36 | 100 | 91 |
| | Women: | Single | 45 | 21 | 35 | 101 | 92 |
| | | Wife | 34 | 19 | 47 | 100 | 32 |
| | | Mother | 42 | 9 | 49 | 100 | 55 |
| f) Total, five fields . . . . | Men: | Bachelor | 60 | 13 | 27 | 100 | 427 |
| | | Husband | 41 | 21 | 38 | 100 | 292 |
| | | Father | 16 | 30 | 54 | 100 | 925 |
| | Women: | Single | 50 | 17 | 33 | 100 | 212 |
| | | Wife | 33 | 18 | 49 | 100 | 51 |
| | | Mother | 33 | 10 | 57 | 100 | 131 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 2,038 |
| Full time . . . . . . . . . . | 3,306 |
| NÁ, one or more items . . . | 592 |
| Aliens . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . . | 6,814 |

*Less than one-half of 1 per cent.

Panels (a) through (e) in Table 3.13 indicate that family role differentiated among those who would be available for full-time study in each of the five fields. Also, in each field the cost of full-time study steadily increased with each increment in family responsibility among the male students.

Reasons for Not Studying Full Time

Some 44 per cent of the students classified as part time on the basis of the Enrollment Index reported that they would not register for full-time study even if a stipend with a cash grant of $4,000 were offered to them (Table 3.12). An open-ended question solicited reasons for not going full time under these conditions.

On the face of it, reasons for not considering full-time study appear to reflect the circumstances of graduate student life: over one-fourth (28 per cent) explicitly mentioned family and economic obligations such as "I'm already in debt $6,000," "The payments on the house are too great," and the like. Another 15 per cent stated that $4,000 would not be sufficient to permit them to study on a full-time basis but did not pinpoint family or other economic responsibilities. Close to one out of five (19 per cent) indicated a preference for part-time study--"Prefer to take school at my own pace" or "I'm not in that much of a hurry"--signifying that they were exercising a choice for part-time study rather than being kept from full-time enrollment. About 14 per cent indicated that their work experiences were as important in training for their careers as the formal programs of study, and 5 per cent stated that aside from considerations of career training, a change to full-time study would entail the loss of tenure or seniority at the jobs they currently held (Table 3.14).

Again, the most useful variable in interpreting these reasons for not studying full time, even if stipend support of $4,000 were offered, is that of the graduate student's family role. According to Table 3.15, there was one pattern of reasons that characterized bachelors and another for fathers. Thus bachelors more than twice as frequently as fathers (26 per cent versus 11 per cent) mentioned the training value of their present employment for their long-run careers. In addition, bachelors were more than twice as likely as fathers (32 per cent versus 13 per cent) to express preferences for part-time study in terms of personal convenience, pace of study, etc. Conversely, 37 per cent of the fathers mentioned family or economic obligations and another 21 per cent said that $4,000 would not be sufficient to meet their current needs, while only one bachelor in twenty gave either of these reasons for not studying full time.

TABLE 3.14

REASONS FOR NOT ENROLLING FOR FULL-TIME STUDY UNDER ANY STIPEND CONDITIONS (PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS WHO WOULD NOT GO FULL TIME)

| Reason | Per Cent |
|---|---|
| Employment | |
| Job is as important as school for career | 14 |
| Would lose tenure, security | 5 |
| Prefer job to school | 11 |
| Family or economic obligations | 28 |
| $4,000 and tuition expenses are not enough | 15 |
| Prefer to study part time | 19 |
| Will finish school work this year | 6 |
| Will finish school work soon | 10 |
| Will study full time in the future | 2 |
| Quitting school | 1 |
| Miscellaneous other | 6 |

| | |
|---|---|
| N | 857 |
| NA on reasons | 57 |
| NA, enrollment | 187 |
| Not applicable | 4,835 |
| Aliens | 878 |
| Total N | 6,814 |

Note: Multiple responses were permitted.

TABLE 3.15

FAMILY ROLE AND REASONS FOR NOT ENROLLING FOR FULL-TIME STUDY (PART-TIME AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS WHO WOULD NOT GO FULL TIME)

(Per Cent Giving These Reasons)

| Reasons | Family Role | | | | | |
|---|---|---|---|---|---|---|
| | Men | | | Women | | |
| | Bachelor | Husband | Father | Single | Wife | Mother |
| Job | | | | | | |
| Training and career . . | 26 | 18 | 11 | 23 | 28 | 7 |
| Tenure, security . . . | 5 | 4 | 5 | 11 | 0 | 3 |
| Other . . . . . . . . . . | 14 | 14 | 11 | 17 | 0 | 5 |
| Family and economic obligations . . . . . . | 4 | 14 | 37 | 3 | 12 | 48 |
| $4,000 not enough . . . . | 5 | 16 | 21 | 5 | 0 | 0 |
| Prefer not going full time . . . . . . . . . | 32 | 16 | 13 | 22 | 32 | 38 |
| All other . . . . . . . . | 32 | 38 | 18 | 30 | 32 | 15 |
| Total . . . . . . . . . . | 118[a] | 120 | 116 | 111 | 108 | 116 |
| N . . . . . . . . . . . . | 105 | 103 | 478 | 64 | 24 | 71 |

| | |
|---|---|
| Total . . . . . . . | 845 |
| NA, life role . . . | 55 |
| NA, reasons . . . . | 14 |
| Inapplicable . . . | 4,835 |
| NA, enrollment . . | 187 |
| Aliens . . . . . . | 878 |
| Total N . . . . . | 6,814 |

[a]Multiple responses were permitted.

Similarly, mothers were less likely than single women or wives without children to mention the training value of their current employment, but mothers did mention their family and/or economic duties as precluding full-time study. While these relationships were similar to those found among the men when family role comparisons were examined, it is interesting to note that sex roles had opposite effects on the likelihood of viewing part-time study as a preference rather than a necessity: among men, bachelors most often could afford to "prefer" part-time study, but the single women were less likely than married women to think of part-time study as preferable.

## Summary

An index of enrollment was constructed on the basis of which between 40 per cent and 72 per cent of the students, depending on field of study, were classified as full-time students.

Although field differences persisted, enrollment status was also an important correlate of stipend holding: fully 82 per cent of the full-time students held stipends while only 47 per cent of the part-time students did so. Full-time students were more likely to hold fellowships and to secure support from federal agencies than were part-time students.

Extent of full-time study varied with personal characteristics: advanced stage of study and top grades were conducive to full-time study. Men and students of both sexes without families were more likely than women or students with families to be full-time students. Students enrolled only part time were more likely to be employed than students enrolled full time.

A majority of the part-time students said that they could be induced, for a stipend of $4,000 or less with no obligations, to enroll full time. However, the more family obligations a student had the more money he wanted to enroll full time. Those students who said that a $4,000 stipend with no obligations would not induce them to enroll full time gave their families as a reason, or said that they needed more money.

## CHAPTER 4

## INSTITUTIONAL CORRELATES OF STIPEND HOLDING

### Introduction

Because many questions about types of stipend support involve the schools students attend, this chapter considers the relationship between the characteristics of graduate schools and the stipend characteristics of graduate students. This chapter offers an analysis of the differences in rates of stipend holding and of the types, sources, and amounts of stipends held by students attending different types of graduate schools.

Our sample of American graduate students may not be used for this purpose without modification because this is a sample of students in thirty-seven selected fields, not a sample of students in graduate schools. To analyze institutional effects requires a sample of students in graduate schools. This latter group was derived by excluding from the sample of students in five composite fields of study those who were selected because they were enrolled in one of the fields with 100 per cent sampling, even though the school they were attending was not sampled for any other fields.[1] This refinement produced a sample of eighty-nine schools and 5,808 cases from among the sub-sample of 5,936 American graduate students who were enrolled for advanced degree programs in spring, 1963.

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[1] See Appendix 1 for a list of fields with 100 per cent sampling, and a detailed description of the rationale and procedures. Note that only students from the special fields on this list represent their schools; accordingly, they do not comprise a representative sample of students in any of the five composite fields of study in any of these schools. Therefore, they were excluded. For example, the University of California at La Jolla was sampled only because it enrolled students in oceanography (a 100 per cent sample field); no other students were sampled there. La Jolla was excluded from the school sample because oceanography students were not a representative sample of the physical sciences at this institution.

Three characteristics of graduate schools that might be expected to influence stipend characteristics of their students are: type of institutional control, quality, and size (Davis, 1962, Chap. 2): Some schools are privately controlled, others publicly; some are schools noted for excellence while others have less prestige; and, of course, some are large and some are small.

The public-private dimension in graduate schools may be an important variable, because each differs in sources of financial support. Thus students in each type of school might report different support patterns. Using the quality ranking of graduate schools constructed by Berelson (1960), one would look for different patterns of support at each level of institutional quality. Similarly, differences might be expected in the types and amounts of support in large and small graduate schools.

In this analysis we have classified the top twelve schools in Berelson's quality ranking as "high" or "Group I"; his second ten and the remaining schools in the Association of Graduate Schools--American Association of Universities groups as "medium " or "Group II," and all other schools as "Group III." Schools with total enrollments of less than 5,000 students were classified as small and those with more than 5,000 students as large. This figure was chosen because equal numbers of schools were above and below this size.

Table 4.1 shows how these institutional characteristics are related. It should be noted that there are more students and more schools in Group II than in Group I schools, and more of both in Group III than in Group II schools. Similarly, there are more public than private schools, and public schools are likely to be large while private schools are likely to be small. Although there are about equal numbers of small and large schools, the large schools enrolled 81 per cent of this sample of students.

Two observations seem appropriate at this point. First, we must remember that students in private, small, and high or medium quality schools are in a minority. When these characteristics are considered consecutively, each field consists primarily of students from the public, the large, and the Group III schools. This is shown in Table 4.2. Thus data shown without a "control" for institutional characteristics reflect the preponderance of

TABLE 4.1

RELATIONSHIP BETWEEN SCHOOL CHARACTERISTICS

| Characteristic | School Quality: Group I | School Quality: Group II | School Quality: Group III | Total |
|---|---|---|---|---|
| a) Control | | | | |
| Public . . . . . . . | 662[a] (5)[b] | 1,072 (12) | 1,720 (30) | 3,454 (47) |
| Private . . . . . . | 455 (7) | 776 (12) | 1,123 (23) | 2,354 (42) |
| Total . . . . . . | 1,117 (12) | 1,848 (24) | 2,843 (53) | 5,808 (89) |
| | N = 5,808 | | | |

| Characteristic | School Quality: Group I | School Quality: Group II | School Quality: Group III | Total |
|---|---|---|---|---|
| b) Size | | | | |
| Small . . . . . . . | 78 (5) | 174 (11) | 854 (32) | 1,106 (48) |
| Large . . . . . . . | 1,034 (7) | 1,674 (13) | 1,989 (21) | 4,702 (41) |
| Total . . . . . . | 1,117 (12) | 1,848 (24) | 2,843 (53) | 5,808 (89) |
| | N = 5,808 | | | |

| Characteristic | School Size: Small | School Size: Large | Total |
|---|---|---|---|
| c) Control | | | |
| Public . . . . . . . | 427 (19) | 3,027 (28) | 3,454 (47) |
| Private . . . . . . | 679 (29) | 1,675 (13) | 2,354 (42) |
| Total . . . . . . | 1,106 (48) | 4,702 (41) | 5,808 (89) |
| | N = 5,808 | | |

[a]Number of students.

[b]Number of schools.

these students. Second, the relatively few students in this sub-sample in small schools of high and medium quality prohibits a simultaneous analysis of the effects of these two characteristics.

The analytic approach is to show the relationships between selected institutional characteristics and academic characteristics of students which we know to be important determinants of stipends, and then to examine the relationships between institutional characteristics and stipend variables.

Earlier analyses of the academic characteristics of students associated with stipend holding suggested that some of these characteristics might also be correlated with school characteristics. This is indeed the case: school quality was the institutional characteristic most highly associated with student academic characteristics previously discussed.

We begin by examining the relationship between school characteristics and student academic characteristics, such as stage of study enrollment status, and grade point average (GPA).

Academic Characteristics

In all fields of study, students in high quality graduate schools were more likely than students in other schools to be enrolled full time (Table 4.3). There is a direct relationship between quality of school and full-time enrollment: depending on field of study, students in high quality schools were enrolled full time more frequently than students in Group III schools. Physical and life science students in high quality schools had the highest levels of full-time enrollment, with eight out of ten students enrolled full time. Engineering students in Group III schools had the lowest rate, slightly over one-quarter of these students being enrolled full time.

In all fields of study except the life sciences, students in public institutions were more likely than students at schools in the private domain to attend full time. The differences in rates ranging from 3 to 17 per cent, were not as impressive as the differences in full-time study by school quality.

TABLE 4.2

FIELD OF STUDY AND SELECTED INSTITUTIONAL CHARACTERISTICS

(Per Cent)

| Selected School Characteristics | | Field of Study | | | | |
|---|---|---|---|---|---|---|
| | | Physical Science | Engineering | Life Science | Behavioral Science | Humanities |
| Control | | | | | | |
| Public . . . . . . . . . | | 59 | 44 | 79 | 64 | 58 |
| Private . . . . . . . . | | 41 | 56 | 21 | 36 | 42 |
| Total . . . . . . . . | | 100 | 100 | 100 | 100 | 100 |
| Quality | | | | | | |
| Group I . . . . . . . . | | 19 | 20 | 17 | 20 | 21 |
| Group II . . . . . . . . | | 33 | 32 | 29 | 35 | 30 |
| Group III . . . . . . . | | 49 | 48 | 54 | 45 | 49 |
| Size | | | | | | |
| Small . . . . . . . . . | | 23 | 19 | 22 | 11 | 18 |
| Large . . . . . . . . . | | 77 | 81 | 78 | 89 | 82 |
| Control and quality | | | | | | |
| Public | Group I . | 12 | 9 | 13 | 12 | 12 |
| | Group II . | 20 | 15 | 21 | 21 | 15 |
| | Group III | 27 | 20 | 44 | 30 | 32 |
| Private | Group I . | 7 | 10 | 4 | 8 | 9 |
| | Group II . | 13 | 17 | 7 | 13 | 15 |
| | Group III | 21 | 28 | 10 | 15 | 18 |
| Control and size | | | | | | |
| Public | Small . . | 8 | 3 | 16 | 5 | 8 |
| | Large . . | 51 | 41 | 63 | 59 | 51 |
| Private | Small . . | 15 | 16 | 6 | 6 | 11 |
| | Large . . | 26 | 40 | 15 | 30 | 31 |
| N . . . . . . . . . . . | | 1,595 | 1,308 | 947 | 1,049 | 909 |

N = 5,808

TABLE 4.3

COMPOSITE FIELD OF GRADUATE STUDY, SELECTED ACADEMIC CHARACTERISTICS, AND INSTITUTIONAL CHARACTERISTICS

| Institutional Characteristics | | Academic Characteristics: a) Stage of Study (Per Cent Stage IV) — Composite Field of Graduate Study: Physical Science | Engineering | Life Science | Behavioral Science | Humanities |
|---|---|---|---|---|---|---|
| Quality | Group I . | 45 (275) | 26 (234) | 45 (154) | 31 (198) | 27 (172) |
| | Group II . | 32 (490) | 16 (390) | 41 (237) | 25 (325) | 10 (231) |
| | Group III. | 18 (692) | 10 (562) | 19 (455) | 13 (419) | 4 (373) |
| Control | Public . . | 29 (869) | 16 (525) | 28 (664) | 18 (602) | 10 (465) |
| | Private. . | 26 (588) | 15 (661) | 37 (182) | 25 (340) | 22 (320) |
| Size | Small . . | 25 (335) | 19 (219) | 16 (190) | 29 (97) | 7 (134) |
| | Large . . | 28 (1,122) | 14 (967) | 34 (656) | 20 (845) | 21 (642) |
| Control and quality | | | | | | |
| Public | Group I . | 45 (175) | 20 (110) | 40 (115) | 25 (119) | 21 (94) |
| | Group II . | 32 (304) | 21 (180) | 39 (176) | 24 (202) | 12 (119) |
| | Group III | 19 (390) | 10 (235) | 19 (373) | 11 (281) | 4 (234) |
| Private | Group I . | 45 (100) | 32 (124) | 59 (139) | 39 (79) | 3 (78) |
| | Group II . | 32 (186) | 12 (210) | 48 (61) | 27 (123) | 8 (112) |
| | Group III | 16 (302) | 10 (327) | 20 (82) | 16 (138) | 4 (130) |

N . . . . 5,207
NA . . . . 601
Total N 5,808

TABLE 4.3--Continued

| Institutional Characteristics | | Academic Characteristics: b) Enrollment (Per Cent Full Time) — Composite Field of Graduate Study: Physical Science | | Engineering | | Life Science | | Behavioral Science | | Humanities | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Quality | Group I . | 80 | (286) | 64 | (252) | 80 | (160) | 78 | (207) | 71 | (183) |
| | Group II . | 69 | (509) | 47 | (411) | 77 | (258) | 69 | (358) | 57 | (257) |
| | Group III | 49 | (746) | 27 | (610) | 67 | (504) | 53 | (466) | 39 | (425) |
| Control | Public . . | 68 | (912) | 48 | (560) | 70 | (725) | 65 | (656) | 54 | (513) |
| | Private . | 51 | (629) | 35 | (713) | 77 | (197) | 62 | (375) | 47 | (352) |
| Size | Small . . | 55 | (359) | 39 | (240) | 76 | (206) | 60 | (113) | 42 | (158) |
| | Large . . | 63 | (1,182) | 41 | (1,033) | 71 | (716) | 64 | (918) | 53 | (707) |
| Control and Quality | | | | | | | | | | | |
| Public | Group I . | 79 | (181) | 61 | (120) | 77 | (120) | 75 | (126) | 70 | (102) |
| | Group II . | 71 | (313) | 59 | (189) | 77 | (192) | 69 | (219) | 64 | (133) |
| | Group III | 61 | (418) | 34 | (251) | 66 | (413) | 58 | (311) | 44 | (278) |
| Private | Group I . | 81 | (105) | 67 | (132) | 90 | (40) | 83 | (81) | 73 | (81) |
| | Group II . | 66 | (196) | 37 | (222) | 77 | (66) | 68 | (139) | 49 | (124) |
| | Group III | 33 | (328) | 23 | (359) | 71 | (91) | 45 | (155) | 31 | (147) |

N . . . . . . . . 5,632
NA . . . . . . . 176
Total N . . . 5,808

Table 4.3--Continued

TABLE 4.3--Continued

| Institutional Characteristics | | Academic Characteristics: c) Grade Point Average (Per Cent A, A-) — Composite Field of Graduate Study: Physical Science | Engineering | Life Science | Behavioral Science | Humanities |
|---|---|---|---|---|---|---|
| Quality | Group I . | 44 (293) | 29 (250) | 25 (157) | 38 (207) | 41 (187) |
| | Group II . | 26 (511) | 30 (411) | 21 (263) | 18 (358) | 27 (265) |
| | Group III | 19 (764) | 17 (617) | 9 (508) | 12 (470) | 19 (434) |
| Control | Public . . | 27 (918) | 22 (554) | 14 (730) | 18 (666) | 24 (516) |
| | Private . | 25 (650) | 24 (724) | 17 (198) | 21 (364) | 28 (370) |
| Size | Small . . | 23 (364) | 23 (244) | 15 (206) | 23 (111) | 23 (159) |
| | Large . . | 27 (1,204) | 23 (1,034) | 15 (722) | 19 (924) | 27 (727) |
| Control and Quality | | | | | | |
| Public | Group I . | 41 (181) | 21 (118) | 22 (118) | 30 (128) | 28 (105) |
| | Group II . | 27 (310) | 32 (185) | 22 (196) | 18 (222) | 28 (133) |
| | Group III | 21 (427) | 15 (251) | 9 (416) | 14 (316) | 21 (278) |
| Private | Group I . | 48 (112) | 36 (132) | 33 (39) | 51 (79) | 55 (82) |
| | Group II . | 25 (201) | 27 (226) | 19 (67) | 17 (136) | 26 (132) |
| | Group III | 17 (337) | 18 (366) | 8 (92) | 10 (154) | 15 (156) |

N . . . . . . . . 5,695
NA . . . . . . . . 113
Total N . . . 5,808

TABLE 4.4

COMPOSITE FIELD OF STUDY, CHARACTERISTICS OF GRADUATE SCHOOLS, AND NUMBER OF STIPENDS HELD

(Per Cent Holding Each Number of Stipends)

| Field of Study | Number of Stipends | School Characteristics | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Quality of Graduate School | | | Control of Graduate School | | Size of Graduate School | |
| | | Group I | Group II | Group III | Public | Private | Small | Large |
| Physical science | 1 | 88 | 79 | 66 | 81 | 66 | 75 | 74 |
| | 2 | 33 | 29 | 19 | 27 | 22 | 25 | 25 |
| | 3 | 8 | 5 | 4 | 5 | 5 | 6 | 4 |
| N | | 296 | 525 | 774 | 936 | 659 | 367 | 1,228 |
| Engineering | 1 | 76 | 67 | 54 | 64 | 61 | 61 | 63 |
| | 2 | 23 | 17 | 13 | 16 | 17 | 21 | 15 |
| | 3 | 4 | 3 | 3 | 3 | 4 | 3 | 3 |
| N | | 257 | 418 | 633 | 573 | 735 | 248 | 1,060 |
| Life science | 1 | 92 | 87 | 76 | 82 | 82 | 84 | 62 |
| | 2 | 26 | 23 | 16 | 19 | 23 | 17 | 21 |
| | 3 | 5 | 5 | 3 | 2 | 8 | 5 | 3 |
| N | | 163 | 270 | 514 | 744 | 203 | 210 | 737 |
| Behavioral science | 1 | 82 | 67 | 55 | 67 | 60 | 67 | 64 |
| | 2 | 30 | 23 | 13 | 21 | 17 | 26 | 19 |
| | 3 | 6 | 3 | 4 | 4 | 3 | 5 | 4 |
| N | | 209 | 365 | 475 | 670 | 379 | 114 | 935 |
| Humanities | 1 | 62 | 54 | 38 | 47 | 48 | 43 | 49 |
| | 2 | 20 | 13 | 7 | 10 | 13 | 13 | 11 |
| | 3 | 5 | 2 | 1 | 2 | 3 | 1 | 3 |
| N | | 192 | 270 | 447 | 531 | 378 | 167 | 742 |

N = 5,808

Even smaller differences were found controlling for size of graduate school; the largest differential was 11 per cent in the humanities. Generally, the larger graduate schools had slightly higher levels of full-time enrollment (except in the life sciences).

When school quality and school control were combined, a different picture emerged. The direct relationship between quality and rates of full-time enrollment was unchanged, but the pattern by school control was modified: Private, high quality schools were more likely to have students enrolled full time than were public high quality schools. Although the differences were not great, students who attended public schools of lesser quality were more likely than students who attended private schools of comparable quality to have been enrolled full time.

In all fields of study there was a direct relationship between school quality and the proportion of the students who had reached Stage IV (students enrolled for more than one year of school, working for a Ph.D. and on the thesis). Slightly over one out of four of the humanities students in high quality schools but less than one out of twenty of those in the Group III schools had reached this point. In the physical sciences, 45 per cent of the students in high quality schools and 18 per cent of the students in the Group III schools had reached this stage of study.

Neither school size nor school control made as large or as consistent a difference as institutional quality in the proportion reaching this level of academic progress. Students of the physical and life sciences and the humanities who studied at large schools were more likely than students in these fields at small schools to have reached this final stage of study. In engineering and the behavioral sciences, however, students in the small schools were more likely to have reached this level. Private school students in the life and behavioral sciences and the humanities were more likely to report advanced study than the public school students in the same fields, but the situation was reversed in the physical sciences and engineering.

When control and quality are combined, the direct relationship between quality and stage remained, but the relationship between stage and institutional control changed. In high quality, private schools, students were more likely to have reached Stage IV than students in comparable public schools. Differences were small and no patterns emerged among schools in Groups II and III.

Depending on field of study, high quality graduate schools had between 12 per cent (engineering) and 26 per cent (behavioral sciences) more students who had an A or an A- grade point average as undergraduates[2] than did Group III graduate schools.

While quality made an important difference in attracting students with higher undergraduate grades, other school characteristics did not. Combining control and quality, students in private, high quality schools had an undergraduate GPA of A or A- more frequently than did the students in public, high quality graduate schools. At other quality levels, however, there was a slight tendency for public graduate school students to report higher undergraduate GPA's than private graduate school students.

Thus students in high quality schools were more likely to be enrolled full time, to be in advanced study, and to have had higher undergraduate grades. Whether students in these schools also were more likely to hold stipends is considered below.

Stipend Characteristics

Keeping these student academic factors in mind, we now move to an analysis of the relationships between institutions and stipends.

The data show that certain institutional characteristics did influence the extent to which stipends are held by students. School quality was very important in this respect, type of control and size of the graduate school of lesser importance (Table 4.4).

Students in the higher quality schools were more likely to hold stipends than students in other schools. This was also true for multiple stipend holding: the higher the quality of the school the more likely graduate students were to report having held a second and even a third stipend. Although third stipends were rare in all fields, they were found most frequently among the physical and behavioral science students in high quality schools.

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[2] The undergraduate GPA is considered here; the preceding chapters used the graduate cumulative GPA.

TABLE 4.5

COMPOSITE FIELD OF STUDY, CONTROL AND QUALITY OF GRADUATE SCHOOL, AND NUMBER OF STIPENDS HELD

(Per Cent Holding Number of Stipends)

| Field of Study | Number of Stipends | Control and Quality | | | | | |
|---|---|---|---|---|---|---|---|
| | | Public | | | Private | | |
| | | Group I | Group II | Group III | Group I | Group II | Group III |
| Physical science | 1 | 89 | 85 | 74 | 87 | 69 | 56 |
| | 2 | 35 | 29 | 22 | 30 | 28 | 15 |
| | 3 | 9 | 3 | 4 | 4 | 6 | 4 |
| N | | 184 | 320 | 432 | 112 | 205 | 342 |
| Engineering | 1 | 69 | 71 | 56 | 82 | 64 | 52 |
| | 2 | 20 | 19 | 11 | 26 | 15 | 14 |
| | 3 | 6 | 3 | 1 | 2 | 4 | 4 |
| N | | 121 | 190 | 262 | 136 | 228 | 371 |
| Life science | 1 | 93 | 87 | 76 | 90 | 85 | 76 |
| | 2 | 28 | 22 | 15 | 22 | 26 | 20 |
| | 3 | 2 | 3 | 2 | 15 | 10 | 3 |
| N | | 122 | 201 | 421 | 41 | 69 | 93 |
| Behavioral science | 1 | 83 | 75 | 55 | 81 | 54 | 53 |
| | 2 | 32 | 25 | 15 | 26 | 20 | 11 |
| | 3 | 8 | 3 | 4 | 4 | 3 | 3 |
| N | | 128 | 224 | 318 | 81 | 141 | 157 |
| Humanities | 1 | 60 | 55 | 39 | 65 | 53 | 36 |
| | 2 | 18 | 11 | 7 | 22 | 16 | 6 |
| | 3 | 3 | 4 | 1 | 8 | 1 | 1 |
| N | | 107 | 137 | 287 | 85 | 133 | 160 |

N = 5,808

Earlier (see Chap. 2) we showed that stipend holding was highest (80 per cent) in the life sciences and lowest, (46 per cent) in the humanities. When school quality is also considered (in Table 4.4), 92 per cent of the life science students in high quality schools were holding stipends as compared with only 38 per cent of the humanities students in Group III schools.

In all five composite fields, more than six out of ten (62 per cent) students in the high quality schools held stipends; in four of the five fields, three-fourths or more of the students had at least one stipend, and one-fifth or more had two. Compared with the fields as a whole, students in high quality schools were well supplied with stipends.

Control and size of the graduate school made almost no difference in stipend holding. Only one difference appeared in the panel of the table distinguishing public and private schools: 81 per cent of the physical science students in public schools held a first stipend, as compared with 66 per cent in private schools. Also, only one difference by school size was worth noting: life science students in small schools held a first stipend more frequently than the students in large schools.

The joint effect of control and quality of the graduate school within field of study is shown in Table 4.5. The direct relationship between quality of graduate school and rate of stipend holding persisted with the following exceptions: A slight advantage accrued in the physical sciences among the students in public schools below Group I; in engineering among students in high quality private and medium quality public schools; and among behavioral science students in medium quality public schools.

In general, school quality made a difference in the extent to which students in these five composite fields held stipends, while control made a difference after taking quality into account. Thus students at high quality public schools usually reported the highest level of stipend holding; their counterparts at private schools in Group III were least likely to report any form of stipend support.

TABLE 4.6

COMPOSITE FIELD OF STUDY, CHARACTERISTICS OF GRADUATE SCHOOLS, AND TYPE OF FIRST STIPEND HELD

(Per Cent of Stipend Holders)

| Field of Study | Type of First Stipend | School Characteristics | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Control | | Quality | | | Size | |
| | | Public | Private | Group I | Group II | Group III | Small | Large |
| Physical science | Scholarship . | 7 | 21 | 2 | 6 | 23 | 20 | 10 |
| | Fellowship . . | 24 | 27 | 35 | 25 | 20 | 25 | 25 |
| | Research assistantship | 27 | 24 | 35 | 27 | 20 | 25 | 26 |
| | Teaching . . . assistantship . | 42 | 27 | 28 | 42 | 37 | 30 | 39 |
| Total . | . . . . . . . . | 100 | 99 | 100 | 100 | 100 | 100 | 100 |
| N . . . | . . . . . . . . | 745 | 426 | 257 | 408 | 506 | 271 | 900 |
| Engineering | Scholarship . . | 18 | 45 | 17 | 31 | 45 | 45 | 31 |
| | Fellowship . . | 29 | 24 | 38 | 30 | 16 | 25 | 27 |
| | Research assistantship . | 31 | 17 | 28 | 25 | 20 | 14 | 25 |
| | Teaching assistantship . | 21 | 13 | 17 | 14 | 19 | 16 | 17 |
| N . . . | . . . . . . . . | 357 | 437 | 192 | 275 | 327 | 146 | 648 |
| Life science | Scholarship . . | 6 | 16 | 1 | 4 | 14 | 14 | 7 |
| | Fellowship . . | 28 | 48 | 37 | 35 | 29 | 47 | 28 |
| | Research assistantship . | 42 | 13 | 40 | 38 | 33 | 25 | 39 |
| | Teaching assistantship . | 23 | 23 | 22 | 23 | 24 | 14 | 26 |
| N . . . | . . . . . . . . | 593 | 163 | 146 | 231 | 379 | 171 | 585 |
| Behavioral science | Scholarship . . | 6 | 18 | 7 | 7 | 15 | 21 | 9 |
| | Fellowship . . | 29 | 45 | 47 | 38 | 23 | 33 | 35 |
| | Research assistantship . | 39 | 19 | 31 | 30 | 35 | 32 | 32 |
| | Teaching assistantship . | 26 | 18 | 15 | 25 | 27 | 14 | 24 |
| N . . . | . . . . . . . . | 444 | 217 | 169 | 239 | 253 | 75 | 586 |
| Humanities | Scholarship . . | 17 | 32 | 22 | 19 | 29 | 20 | 24 |
| | Fellowship . . | 20 | 35 | 34 | 25 | 22 | 35 | 25 |
| | Research assistantship . | 9 | 8 | 9 | 6 | 9 | 5 | 9 |
| | Teaching assistantship . | 54 | 25 | 35 | 50 | 40 | 40 | 42 |
| N . . . | . . . . . . . . | 245 | 172 | 113 | 144 | 160 | 68 | 349 |

N . . . . . . 3,799
NA . . . . . 86
None . . . . 1,923
Total N . 5,808

TABLE 4.7

COMPOSITE FIELD OF STUDY, CONTROL AND QUALITY OF GRADUATE SCHOOL, AND TYPE OF FIRST STIPEND HELD

(Per Cent of Stipend Holders)

| Field of Study | Quality of School | School Control | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Public | | | | | Private | | | | |
| | | Type of First Stipend | | | | N | Type of First Stipend | | | | N |
| | | Schol-ar-ship | Fel-low-ship | Assistantship Research | Assistantship Teach | | Schol-ar-ship | Fel-low-ship | Assistantship Research | Assistantship Teach | |
| Physical science | Group I | 3 | 31 | 38 | 29 | 160 | 2 | 41 | 30 | 27 | 97 |
| | Group II | 4 | 23 | 29 | 44 | 268 | 9 | 29 | 25 | 37 | 140 |
| | Group III | 12 | 22 | 20 | 46 | 317 | 40 | 19 | 21 | 20 | 189 |
| Engi-neering | Group I | 11 | 41 | 30 | 18 | 81 | 22 | 36 | 26 | 16 | 111 |
| | Group II | 14 | 36 | 35 | 15 | 132 | 47 | 24 | 17 | 12 | 143 |
| | Group III | 27 | 17 | 29 | 27 | 144 | 59 | 16 | 12 | 13 | 183 |
| Life science | Group I | 0 | 25 | 50 | 25 | 110 | 6 | 75 | 11 | 8 | 36 |
| | Group II | 3 | 28 | 48 | 21 | 172 | 7 | 54 | 8 | 30 | 59 |
| | Group III | 11 | 30 | 36 | 24 | 311 | 29 | 28 | 18 | 25 | 68 |
| Behav-ioral science | Group I | 5 | 36 | 39 | 20 | 104 | 11 | 65 | 17 | 8 | 65 |
| | Group II | 4 | 31 | 38 | 28 | 167 | 15 | 54 | 12 | 18 | 72 |
| | Group III | 10 | 24 | 39 | 27 | 173 | 26 | 21 | 26 | 26 | 80 |
| Human-ities | Group I | 15 | 13 | 15 | 57 | 60 | 30 | 58 | 2 | 9 | 53 |
| | Group II | 11 | 23 | 5 | 61 | 75 | 28 | 28 | 7 | 38 | 69 |
| | Group III | 24 | 22 | 7 | 47 | 110 | 40 | 22 | 14 | 24 | 50 |

| | |
|---|---|
| N . . . . . . . . . | 3,799 |
| No stipend . . . | 1,923 |
| NA, type . . . . | 86 |
| Total . . . . | 5,808 |

Type of Stipends Held

We have shown (in Chap. 2) that the type of stipend held by graduate students depended heavily on field of study. Here, Table 4.6 indicates that the type of stipend obtained also depended on the quality of the graduate school. In all fields of study, students in Group I schools were less likely to hold scholarships than students in Group III schools and were more likely to hold fellowships.

Also, stipend recipients in physical and life sciences and engineering were more likely to hold research assistantships than their counterparts in other schools.

When the high quality schools provided stipend support to their students, they did so more frequently in a form that provided either a cash grant plus tuition or an opportunity to work on research. Other schools, in contrast, were more likely to provide tuition or less or to require students to assume some teaching chores in return for stipends. This difference in types of support available for graduate students may reflect the manpower needs of the various universities in the sample.

Generally speaking, the public school students in all fields of study were more likely than the private school students to have stipends that require duties. To put this as strongly as the data warrant, the most common stipend for a student in a public school was the assistanship, while the most common stipend for the private school student was the fellowship, except in engineering, a field providing scholarships. In engineering and the life and behavioral sciences almost one-half the stipend recipients in private schools held fellowships which gave them cash grants over and above their tuition bills. Only about one-third of the students in private schools, in all fields, held assistantships.

Small schools were more generous with scholarships than were large schools. In the four science and engineering composite fields of study, students in small schools more frequently held scholarships than students in large schools, while in the humanities the opposite pattern occurred. Fellowships were held with equal frequency by students in small and large schools except for students in the humanities and life sciences. In these two fields students were more likely to hold fellowships if they attended smaller schools. Students in large schools were more likely to hold assistantships than students in small schools.

Quality and control of the graduate school were combined with field of study to further specify type of first stipend held. In four of the five fields students in Group I private schools held fellowships more frequently than students in Group I public schools, and students in Group III public schools held teaching assistantships more frequently than students in Group III private schools. These relationships are shown in the following panel:

| Field of Study | Percentage Differences In | |
|---|---|---|
| | Fellowships: Private Group I Minus Public Group I | Teaching Assistantships: Public Group III Minus Private Group III |
| Physical science . . . . . | +10 | +26 |
| Engineering . . . . . . . | - 5 | +14 |
| Life science . . . . . . . | +50 | - 1 |
| Behavioral science . . . . | +27 | + 1 |
| Humanities . . . . . . . . | +45 | +23 |

The effects of control and quality of graduate school are clearly additive: fellowships were more common in the Group I private schools, and teaching assistantships were more common in Group III public schools.

If, for example, graduate schools utilize students according to their manpower needs, differences in stipend holding may also indicate different approaches to graduate training. The current debate on the character of graduate education has centered on the question of the purpose and nature of the training of graduate students. Should they be prepared to be college teachers or should they be taught to do research?

Data on the kinds of stipends provided by different types of institutions (see Table 4.7) shed some light, albeit indirectly, on this question. The way support is provided to students by graduate schools may reflect the aspect of the graduate program that these institutions consider to be important. When support is given primarily in a form requiring research activity, the emphasis is on training students to do research; when support requires teaching activity the emphasis is on training students to teach. The freedom to study and concentrate afforded by nonduty stipends may allow one to learn either research or teaching techniques, but when either teaching or research is required of the student, he must be getting training in one of these two aspects of his field.

If teaching assistantships are prevalent we infer that there is an emphasis on the teaching aspect of graduate training; if research assistantships are more prevalent there is an emphasis on research techniques and procedures.[3] When nonduty stipends are given, we cannot say that either of these aspects of graduate training is emphasized.

In Chapter 2 sources of support were shown to vary from field to field. Despite the popular impression that most graduate stipends flow from the Federal coffers, only one graduate student out of three reported a stipend from a Federal source. Consider the relationship between institutional characteristics and stipend sources: Whether the graduate school was public or private made little difference in sources of stipend support (Table 4.8). Only in the life sciences did we find a public-private difference in rates of Federal support of 10 per cent or more. Students attending private schools were more likely to report holding NIH traineeships and fellowships than students attending public schools. Other than this differential, there was no evidence that Federal stipends were given more often to students attending public or private schools.[4]

The proportion of students receiving stipends from non-Federal sources varied by school control. In all fields public school students

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[3]To be sure, student support is only partly determined by an institution's policy. Fellowships may be granted to students who then choose to attend an institution.

[4]Nor was there evidence here that students with Federal stipends were more likely to attend public rather than private institutions.

reported holding stipends coming directly from the university more frequently than private school students. These advantages in support from the university were offset for students in private schools and in physical science and engineering by relatively more support from business and industry. Many students in these two fields were supported by their employers while attending school. Except in the humanities, levels of Federal support ranged between 38 and 49 per cent among students in high quality schools and between 28 and 42 per cent among students in other schools. In the humanities the level of support was much lower. Students in physical and life sciences were more likely to receive Federal support.

Among physical science students attending schools of high quality this advantage comes from the support secured from the Atomic Energy Commission and the National Science Foundation. In engineering, less pronounced advantages from a variety of Federal sources were evident. Engineering and behavioral science students in top quality schools reported similar likelihood of Federal stipends, although there were differences in individual Federal agencies. Humanities students in other schools were more likely than students in high quality schools to report holding stipends from Federal agencies--primarily via the National Defense Education Act.

In the physical sciences students in the schools below Group I reported holding stipends directly from their school more frequently than students in the high quality schools. In engineering the opposite was true. In the behavioral sciences and humanities, foundation support was reported by students in high quality schools more frequently than it was by students in other schools. In the life sciences, students in Group III schools reported holding stipends from state governments more frequently than students in other schools.

Information concerning sources of stipend support considering both school quality and type of institution is shown in Table 4.11. In two-thirds of the possible comparisons in this table, private school students reported stipend support from the Federal government more frequently than did public school students. There was great variation in extent of Federal support by field: at the one extreme, 78 per cent of the life

TABLE 4.8

COMPOSITE FIELD OF STUDY, CONTROL OF GRADUATE SCHOOL, AND SOURCE OF FIRST STIPEND HELD

(Per Cent of Stipend Holders)

| Field of Study | School Control | Sources of First Stipend Held | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Federal Government | | | | | | | | | | | | Other | | | | | | | | | |
| | | Total Federal | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | Nat'l Aeronautics and Space Admn. | Nat'l Defense Education Act | Other Office of Education | NIH[a] Fellowship | NIH Trainee | Other Public Health Service | Other Federal | Total Other | Foundation | Business | School, Directly | School Source Unknown | State Government | Local Government | Foreign Government | Other | N |
| Physical science | Public | 35 | 7 | 4 | 13 | 0 | 1 | 3 | 0 | 1 | 1 | 1 | 3 | 65 | 3 | 6 | 44 | 7 | 3 | 0 | 1 | 0 | 745 |
| | Private | 41 | 6 | 6 | 19 | 0 | 1 | 2 | 0 | 2 | 1 | 1 | 3 | 59 | 4 | 15 | 32 | 7 | 2 | 0 | 0 | 0 | 426 |
| Engi-neering | Public | 31 | 4 | 7 | 8 | 0 | 3 | 3 | 0 | 0 | 1 | 1 | 4 | 69 | 6 | 19 | 33 | 8 | 3 | 0 | 1 | 0 | 357 |
| | Private | 28 | 2 | 5 | 7 | 0 | 4 | 2 | 0 | 0 | 1 | 1 | 4 | 72 | 3 | 41 | 22 | 4 | 2 | 0 | 0 | 0 | 437 |
| Life science | Public | 43 | 1 | 1 | 17 | 0 | 0 | 3 | 0 | 4 | 11 | 3 | 3 | 57 | 2 | 3 | 35 | 11 | 5 | 0 | 1 | 0 | 593 |
| | Private | 55 | 2 | 1 | 15 | 0 | 0 | 0 | 0 | 10 | 23 | 4 | 1 | 45 | 1 | 1 | 23 | 8 | 10 | 0 | 2 | 0 | 163 |
| Behav-ioral science | Public | 36 | 0 | 3 | 4 | 1 | 0 | 6 | 1 | 9 | 4 | 4 | 4 | 64 | 4 | 1 | 41 | 8 | 7 | 0 | 2 | 0 | 444 |
| | Private | 43 | 0 | 1 | 6 | 4 | 0 | 5 | 0 | 9 | 11 | 3 | 3 | 57 | 7 | 5 | 34 | 5 | 4 | 0 | 2 | 0 | 217 |
| Human-ities | Public | 12 | 0 | 1 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 2 | 88 | 6 | 0 | 64 | 7 | 9 | 0 | 3 | 0 | 245 |
| | Private | 8 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 92 | 13 | 2 | 59 | 5 | 11 | 0 | 2 | 0 | 172 |

| | |
|---|---|
| N . . . . . . . . . . . | 3,799 |
| No stipend . . . . . | 1,923 |
| NA, source . . . . . | 86 |
| Total . . . . . . . | 5,808 |

[a]NIH = National Institutes of Health.

TABLE 4.9

COMPOSITE FIELD OF STUDY, QUALITY OF GRADUATE SCHOOL, AND SOURCE OF FIRST STIPEND HELD

(Per Cent of Stipend Holders)

| Field of Study | School Quality | Sources of First Stipend Held: Federal Government | | | | | | | | | | | | Other | | | | | | | | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Federal | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | Nat'l Aeronautics and Space Admn. | Nat'l Defense Education Act | Other Office of Education | NIH[a] Fellowship | NIH Trainee | Other Public Health Service | Other Federal | Total Other | Foundation | Business | School, Directly | School Source Unknown | State Government | Local Government | Foreign Government | Other | |
| Physical science | Group I . . . . . | 49 | 15 | 4 | 22 | 0 | * | 1 | 0 | 2 | 3 | 2 | 2 | 51 | 4 | 55 | 35 | 5 | 2 | * | 0 | 0 | 257 |
| | Group II . . . . | 36 | 8 | 5 | 14 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 | 64 | 4 | 6 | 43 | 8 | 3 | 0 | * | 0 | 408 |
| | Group III . . . . | 31 | 3 | 4 | 13 | * | 1 | 5 | 0 | 1 | 1 | 1 | 3 | 69 | 2 | 14 | 40 | 8 | 3 | 0 | 1 | 0 | 506 |
| Engineering | Group I . . . . . | 38 | 5 | 7 | 13 | 0 | 2 | 2 | 0 | 0 | 2 | 2 | 5 | 63 | 3 | 17 | 33 | 5 | 3 | 0 | 1 | 0 | 192 |
| | Group II . . . . | 28 | 1 | 8 | 7 | * | 1 | 3 | 0 | 0 | 2 | 1 | 5 | 73 | 8 | 34 | 23 | 5 | 3 | 0 | 1 | 0 | 275 |
| | Group III . . . . | 28 | 3 | 5 | 5 | * | 6 | 3 | 1 | 1 | 0 | 1 | 4 | 72 | 3 | 37 | 26 | 6 | 1 | 0 | * | 0 | 327 |
| Life science | Group I . . . . . | 49 | 3 | 1 | 10 | 0 | 0 | 0 | 0 | 10 | 21 | 4 | 1 | 51 | 1 | 3 | 31 | 14 | 3 | 0 | 0 | 0 | 146 |
| | Group II . . . . | 49 | 2 | 1 | 10 | 0 | * | 3 | 0 | 9 | 19 | 3 | 3 | 51 | 3 | 3 | 33 | 9 | 2 | 0 | * | 0 | 231 |
| | Group III . . . . | 42 | 1 | * | 23 | 0 | 0 | 3 | 0 | 3 | 7 | 3 | 2 | 58 | 2 | 2 | 32 | 10 | 10 | 0 | 1 | 0 | 379 |
| Behavioral science | Group I . . . . . | 38 | 0 | 1 | 12 | 1 | 0 | 2 | 0 | 11 | 5 | 5 | 3 | 62 | 12 | 1 | 36 | 5 | 5 | 0 | 2 | 0 | 169 |
| | Group II . . . . | 41 | 0 | 3 | 3 | 2 | 0 | 6 | * | 11 | 9 | 3 | 3 | 59 | 3 | 2 | 38 | 8 | 7 | 0 | 1 | 0 | 239 |
| | Group III . . . . | 37 | 0 | 2 | 2 | 4 | * | 8 | 2 | 6 | 6 | 3 | 4 | 63 | 2 | 3 | 42 | 8 | 5 | 0 | 3 | 0 | 253 |
| Humanities | Group I . . . . . | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 96 | 17 | 0 | 60 | 6 | 11 | 0 | 2 | 0 | 113 |
| | Group II . . . . | 12 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 88 | 8 | 1 | 65 | 7 | 6 | 0 | 3 | 0 | 144 |
| | Group III . . . . | 13 | 0 | 1 | 0 | 0 | 0 | 9 | 0 | 1 | 0 | 0 | 1 | 88 | 4 | 3 | 60 | 5 | 13 | 0 | 3 | 0 | 160 |

| | |
|---|---|
| N . . . . . . . . . . . | 3,799 |
| No stipend . . . . . . | 1,923 |
| NA, source . . . . . . | 86 |
| Total N . . . . . . . | 5,808 |

*Less than one-half of 1 per cent.

[a]NIH = National Institutes of Health.

TABLE 4.10

COMPOSITE FIELD OF STUDY, SIZE OF SCHOOL, AND SOURCE OF FIRST STIPEND HELD

(Per Cent of Stipend Holders)

| Field of Study | School Quality | Sources of First Stipend Held: Federal Government | | | | | | | | | | | | Other | | | | | | | | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Federal | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | Nat'l Aeronautics and Space Admn. | Nat'l Defense Education Act | Other Office of Education | NIH[a] Fellowship | NIH Trainee | Other Public Health Service | Other Federal | Total Other | Foundation | Business | School, Directly | School Source Unknown | State Government | Local Government | Foreign Government | Other | |
| Physical science | Small . . . . . | 35 | 4 | 7 | 13 | 0 | 1 | 6 | 0 | 1 | 1 | 0 | 2 | 65 | 3 | 15 | 37 | 7 | 3 | 0 | 1 | 0 | 271 |
| | Large . . . . . | 37 | 8 | 4 | 16 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 3 | 63 | 3 | 8 | 41 | 7 | 3 | 0 | 1 | 0 | 900 |
| Engineering | Small . . . . . | 31 | 3 | 3 | 8 | 1 | 4 | 5 | 1 | 1 | 0 | 1 | 3 | 69 | 3 | 34 | 24 | 7 | 1 | 0 | 0 | 0 | 146 |
| | Large . . . . . | 29 | 3 | 7 | 7 | 0 | 3 | 2 | 0 | 0 | 1 | 1 | 5 | 71 | 4 | 30 | 27 | 5 | 2 | 0 | 1 | 0 | 648 |
| Life science | Small . . . . . | 57 | 0 | 0 | 33 | 0 | 0 | 5 | 0 | 3 | 13 | 2 | 1 | 43 | 2 | 2 | 25 | 4 | 9 | 0 | 2 | 0 | 171 |
| | Large . . . . . | 42 | 2 | 1 | 11 | 0 | 0 | 2 | 0 | 6 | 13 | 4 | 3 | 58 | 2 | 3 | 35 | 13 | 5 | 0 | 1 | 0 | 585 |
| Behavioral science | Small . . . . . | 40 | 0 | 4 | 3 | 4 | 0 | 8 | 0 | 4 | 9 | 0 | 8 | 60 | 7 | 1 | 44 | 3 | 3 | 0 | 3 | 0 | 75 |
| | Large . . . . . | 38 | 0 | 2 | 5 | 2 | 0 | 5 | 1 | 10 | 6 | 4 | 3 | 62 | 5 | 2 | 38 | 8 | 6 | 0 | 2 | 0 | 586 |
| Humanities | Small . . . . . | 18 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 1 | 82 | 9 | 1 | 62 | 3 | 3 | 0 | 4 | 0 | 68 |
| | Large . . . . . | 9 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 1 | 91 | 9 | 1 | 62 | 7 | 11 | 0 | 2 | 0 | 349 |

| | |
|---|---|
| N . . . . . . . . . . | 3,799 |
| No stipend . . . . . | 1,923 |
| NA, source . . . . . | 86 |
| Total . . . . . . . | 5,808 |

[a]NIH = National Institutes of Health.

TABLE 4.11

COMPOSITE FIELD OF STUDY, CONTROL AND QUALITY OF GRADUATE SCHOOL, AND SOURCE OF FIRST STIPEND

(Per Cent of Stipend Holders Receiving First Stipend From Federal Government Agencies)

| Field of Study | Quality of School | School Control | |
|---|---|---|---|
| | | Public | Private |
| Physical science | Group I . . . . | 45 (160) | 56 (97) |
| | Group II . . . . | 34 (268) | 41 (140) |
| | Group III . . . | 31 (317) | 32 (189) |
| Engineering | Group I . . . . | 44 (81) | 32 (111) |
| | Group II . . . . | 28 (132) | 26 (143) |
| | Group III . . . | 27 (144) | 28 (183) |
| Life science | Group I . . . . | 39 (110) | 78 (36) |
| | Group II . . . . | 45 (172) | 63 (59) |
| | Group III . . . | 43 (311) | 37 (68) |
| Behavioral science | Group I . . . . | 35 (104) | 42 (65) |
| | Group II . . . . | 40 (167) | 44 (72) |
| | Group III . . . | 34 (173) | 43 (80) |
| Humanities | Group I . . . . | 7 (60) | 2 (53) |
| | Group II . . . . | 12 (75) | 12 (69) |
| | Group III . . . | 15 (110) | 8 (50) |

N . . . . . . . . . . . . 3,799
NA, not applicable . . . 2,009

Total N . . . . . . . . 5,808

sciences students in high quality private schools held stipends from Federal agencies; at the other extreme, only 2 per cent of the humanities students in these same schools found support through Federal channels.

In the life and physical science fields of study students attending high quality private schools were more likely to receive Federal support than students attending public institutions of equal quality. Among engineering, humanities, and life science students attending Group III schools, those in public schools had the same or a better chance of holding stipends from Federal sources.

Federal agencies were mentioned much less frequently as donors of second stipends (Table 4.12). The Federal government was reported by one-third or more of the stipend holders in nineteen of the thirty-five first stipend cells, and in only eight of the second stipend cells. Clearly, a Federal stipend was reported to be much more valuable than those from other sources.

Thus levels of Federal support depended on both field of study and institutional characteristics. In four of the five fields of study more than one-third of the students in the high quality schools reported that their stipends came from the Federal government, and two of these four percentages were very close to 50 per cent. Among the medium quality schools the proportion was one-third or more in only three of the fields, and in only one did it approach 50 per cent. Only two fields had one-third or more of their students supported by the Federal government in other schools.

## Income Received from All Stipends

We now turn to a description of the income received by American graduate students from all stipends. The median dollar value of this stipend income was computed for recipients classified by field of study and type of institution attended. This median was derived from a class interval distribution, and is therefore approximate. Because of this, we ignore differences of $100 or less. Of the institutional characteristics, school quality was most important in accounting for differences in stipend income; control of the school was less so; size was the least important factor.

TABLE 4.12

COMPOSITE FIELD OF STUDY, CHARACTERISTICS OF GRADUATE SCHOOLS, AND SOURCES OF FIRST AND SECOND STIPENDS

(Per Cent of Stipend Holders Receiving Stipends from Federal Sources)

| Field of Study | Number of Stipends Held | School Control | | School Quality | | | School Size | |
|---|---|---|---|---|---|---|---|---|
| | | Public | Private | Group I | Group II | Group III | Small | Large |
| Physical science | First . . . . | 35 (745) | 41 (426) | 49 (257) | 36 (408) | 31 (506) | 35 (271) | 37 (900) |
| | Second . . . | 29 (243) | 33 (135) | 24 (96) | 37 (142) | 29 (140) | 24 (85) | 32 (293) |
| Engineering | First . . . . | 31 (357) | 28 (437) | 37 (192) | 27 (275) | 28 (327) | 31 (146) | 29 (648) |
| | Second . . . | 14 (83) | 21 (114) | 17 (54) | 14 (66) | 23 (77) | 15 (47) | 19 (150) |
| Life science | First . . . . | 43 (593) | 55 (163) | 49 (146) | 49 (231) | 42 (379) | 57 (171) | 42 (585) |
| | Second. . . . | 36 (132) | 34 (61) | 25 (40) | 38 (61) | 39 (75) | 38 (34) | 35 (142) |
| Behavioral science | First . . . . | 36 (444) | 43 (217) | 38 (169) | 41 (239) | 37 (253) | 40 (75) | 38 (586) |
| | Second . . . | 21 (135) | 18 (61) | 20 (56) | 22 (79) | 20 (61) | 17 (30) | 21 (166) |
| Humanities | First . . . . | 12 (245) | 8 (172) | 4 (113) | 12 (144) | 13 (160) | 18 (68) | 9 (349) |
| | Second . . . | 12 (49) | 2 (44) | - (31) | 9 (32) | 13 (30) | 5 (20) | 8 (73) |

N, first stipend . . . . . 3,799
NA, not applicable . . . . 2,009
Total . . . . . . . . . . . 5,808

N, second stipend . . . . . 1,040
NA, not applicable . . . . . 4,768
Total . . . . . . . . . . . 5,808

TABLE 4.13

COMPOSITE FIELD OF STUDY, CHARACTERISTICS OF GRADUATE SCHOOL, AND MEDIAN INCOME FROM ALL STIPENDS HELD

(Among Stipend Holders)

| Field of Study | School Control | | | | School Quality | | | | | | School Size | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public | | Private | | Group I | | Group II | | Group III | | Small | | Large | |
| | Median | N | Median | N | Median | N | Median | N | Median | N | Median | N | Median | N |
| Physical science. . . | $2,580 | 751 | $2,850 | 430 | $3,240 | 260 | $2,830 | 412 | $2,000 | 507 | $2,260 | 271 | $2,680 | 710 |
| Engineering . . . . . | 2,280 | 357 | 1,950 | 440 | 3,090 | 189 | 2,270 | 276 | 1,400 | 332 | 2,220 | 149 | 2,160 | 648 |
| Life science . . . . | 2,630 | 604 | 2,970 | 166 | 3,070 | 149 | 2,810 | 231 | 2,360 | 390 | 2,620 | 176 | 2,690 | 594 |
| Behavior science . . | 2,340 | 447 | 2,780 | 225 | 2,790 | 172 | 2,550 | 242 | 2,100 | 258 | 2,540 | 76 | 2,450 | 596 |
| Humanities . . . . . | 1,990 | 246 | 1,970 | 179 | 2,430 | 116 | 2,040 | 143 | 1,740 | 166 | 2,020 | 73 | 1,980 | 352 |

N . . . . . . . . . . . . 3,854

NA, not applicable . . 1,963

Total N . . . . . . . . 5,808

TABLE 4.14

COMPOSITE FIELD OF STUDY, CONTROL AND QUALITY OF GRADUATE SCHOOL, AND MEDIAN INCOME FROM ALL STIPENDS

(Among Stipend Holders)

| Field of Study | School Control | School Quality | | | | | |
|---|---|---|---|---|---|---|---|
| | | Group I | | Group II | | Group III | |
| | | Median | N | Median | N | Median | N |
| Physical science | Public . . . . . . . | $2,880 | 162 | $2,720 | 270 | $2,140 | 319 |
| | Private . . . . . . . | 3,720 | 98 | 3,090 | 142 | 1,390 | 190 |
| Engineering | Public . . . . . . . | 2,450 | 80 | 2,530 | 132 | 2,010 | 145 |
| | Private . . . . . . . | 3,490 | 109 | 1,670 | 144 | 830 | 187 |
| Life science | Public . . . . . . . | 2,930 | 112 | 2,740 | 173 | 2,370 | 319 |
| | Private . . . . . . . | 3,570 | 37 | 3,300 | 58 | 2,270 | 71 |
| Behavioral science | Public . . . . . . . | 2,680 | 106 | 2,400 | 166 | 2,060 | 175 |
| | Private . . . . . . . | 3,140 | 66 | 3,070 | 76 | 2,320 | 83 |
| Humanities | Public . . . . . . . | 2,440 | 62 | 2,090 | 73 | 1,760 | 111 |
| | Private . . . . . . . | 2,420 | 54 | 1,950 | 70 | 1,690 | 55 |

N . . . . . . . . . . . . . 3,845
NA, not applicable . . . 1,963
Total N . . . . . . . . . 5,808

Size made only one difference; physical science students in large schools reported that their stipends were worth about $400 more than those of physical science students in small schools.

Private school students in physical, life, and behavioral science fields reported stipends worth $300 more than those received by students in the same fields in public schools. But public school students in engineering held stipends worth $300 more than those held by private school engineering students.

A direct relationship obtained between quality of graduate school and value of all stipends: the higher the quality of the graduate school, the more valuable the stipends received. Students in Group I schools, depending on their field of study, received stipends worth $200 to $800 more than the students in Group II schools, and the students in the latter schools received (depending again on field of study) between $300 and $900 more than the students in Group III schools.

Combining school quality and control, the relationship between quality and value of stipends was unchanged, but the pattern by control was modified. Students in high quality private schools reported stipends that were between $500 and $1,000 greater than those obtained by students in public schools, depending on field of study. However, there was no difference in the value of the stipends of the humanities students in high quality public and private schools. Students in Group III public schools reported stipends worth between $100 and $1,200 more than students in Group III private schools depending on field of study.

Dollar amounts reported by graduate students as income from stipends were as follows: Students in all five fields at high and medium quality schools received more than $2,000; the students of physical and life sciences, and engineering in high quality private schools increased this figure by over $1,000. Except for the humanities, recipients in high quality private schools all reported stipends worth over $3,000.[4]

---

[4]One possible procedure for assessing the differences in cost between public and private institutions or schools of different quality goes as follows: compute an average cost of tuition and fees for each school in the sample; consider only amounts greater than the differences produced by this adjustment. However, tuition structures vary within universities, and students carry different course loads. Since a computation of costs per course for each student in each institution was not feasible, the reader will note that the analysis was based on respondents' reports of their costs, and differences were discussed on this basis.

## Summary

Stipend holding was associated with school quality among students enrolled for advanced study in five composite fields covering engineering, the sciences, and several of the humanities. Between 62 and 92 per cent of the students, depending on field of study, in high quality (Group I) schools held stipends in contrast with some 38 to 76 per cent of their counterparts in Group III schools. Types of stipends held during the period under study as well as extent of stipend holding varied by institutional quality and by type of control. Stipends from Federal agencies were more frequently reported by those attending high quality schools, and their stipends had a higher dollar value as well. Other institutional characteristics--institutional control and size of student enrollment--were also considered, but were not as significant as institutional quality in accounting for the extent of stipend holding in these five fields of study, type of stipend received, source of stipend, or value of stipend.

CHAPTER 5

# SOURCES OF INCOME

In this chapter we describe the sources of economic support reported by American graduate students. These sources are many. Understanding how graduate students support themselves and their families involves knowing both the sources of support and their interrelationships; for example, if students are supported by one or by a variety of sources, and the relative importance of these sources.

Preceding chapters have shown that a variety of personal and academic characteristics of graduate students were significantly related to stipend holding. In this chapter we relate income derived from stipends to total income and analyze stipends as one component of all income sources.

## Sources of Income

The questionnaire classified sources of income into four broad categories:

1. Stipend income.--Any money received by the student the university to further the student's education which does not need to be repaid and is not from parents or relatives. Students could report as many as three stipends. Thus information on amounts and types of stipends, if students had more than one, was secured as well as the total stipend income.[1]

2. Other income.--Any money received from nonacademic sources, such as income derived from full- or part-

[1] Preliminary analysis indicated little reason to differentiate income derived from the second and the third stipend sources; only 2 per cent of the students held third stipends. Thus second and third stipend incomes were combined.

time employment, gifts from parents, spouse's employment and stipend income, and veterans' benefits and military pay.

3. Reduction in assets.--Withdrawal of savings, selling stock, car, house, etc. Very few students indicated they had reduced their assets and, if they had, the amounts were so low as to be of little or no importance in income.

4. Additions to liabilities.--Loans for education and non-academic purposes were listed by source: National Defense Education Act Loan, other educational loans, or noneducational sources.

For purposes of presentation and analysis, total income in this chapter is regarded as the sum of the total stipend and other income categories. Veterans' benefits, military service income, and a residual "other income" category (see p. 12 of the questionnaire, Appendix 4) were not tabulated separately because negligible proportions of students reported any income from either veterans' benefits or military service.

Graduate students in the five composite fields covered in this survey reported their financial situations for the period of July, 1962, to June, 1963. The total median income of all students was $5,200 (Table 5.1). Almost 90 per cent of the students reported receiving income from nonstipend sources, and 66 per cent reported income from stipends. Furthermore, total median income from nonstipend sources was greater ($3,800) than that derived from stipends ($2,400). Comparison of specific nonstipend sources, however, showed a slightly different pattern.

A greater proportion of students received income from stipends (66 per cent) than from any other single source; 57 per cent reported income from full- or part-time nonstipend employment, 28 per cent from their spouses, and 26 per cent reported support from family gifts. Looking at both frequency of occurrence and median cash value from these sources, nonacademic employment was the single largest income source, contributing $4,000, followed by spouse's income ($3,200), and the

TABLE 5.1

SOURCES OF INCOME AMONG AMERICAN GRADUATE STUDENTS BY COMPOSITE FIELD OF STUDY

(Per Cent Reporting Any Income[a] and the Median Cash Value among Those Reporting Any)

| Field of Study | Total Income | | Total Income from Stipends | | First Stipend Reported | | Second and/or Third Stipend | | Total Non-stipend Income | | Your Own Job | | Spouse's Job and/or Stipend | | Gifts from Parents | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Physical science . | 99 | $4,800 | 74 | $2,500 | --[a] | $2,300 | 24 | $700 | 85 | $3,000 | 53 | $3,000 | 28 | $3,000 | 25 | $300 | 1,617 |
| Engineering | 98 | 7,900 | 61 | 2,200 | -- | 1,900 | 15 | 900 | 92 | 7,200 | 76 | 7,500 | 19 | 2,900 | 16 | 400 | 1,328 |
| Life science . | 99 | 4,300 | 80 | 2,600 | -- | 1,900 | 19 | 800 | 84 | 2,400 | 40 | 2,000 | 32 | 3,000 | 29 | 300 | 1,004 |
| Behavioral science . | 98 | 4,800 | 64 | 2,400 | -- | 2,200 | 19 | 700 | 89 | 3,400 | 55 | 1,800 | 34 | 3,300 | 32 | 400 | 1,055 |
| Humanities. | 98 | 4,700 | 46 | 2,000 | -- | 1,900 | 11 | 400 | 93 | 4,000 | 60 | 3,000 | 31 | 4,500 | 30 | 500 | 932 |
| Total, five fields . | 98 | 5,200 | 66 | 2,400 | 66 | 2,200 | 18 | 700 | 89 | 3,800 | 57 | 4,000 | 28 | 3,200 | 26 | 400 | 5,936 |

| | |
|---|---|
| N . . . . . . . . | 5,936 |
| Aliens . . . . | 878 |
| Total N . . . | 6,814 |

[a]Indicates base is too small to percentage.

respondent's stipend income ($2,400). The median income from gifts from parents or relatives was negligible--$400. Among the American graduate students sampled in this survey, earnings from nonstipend employment and from stipends were the two primary sources of economic support.

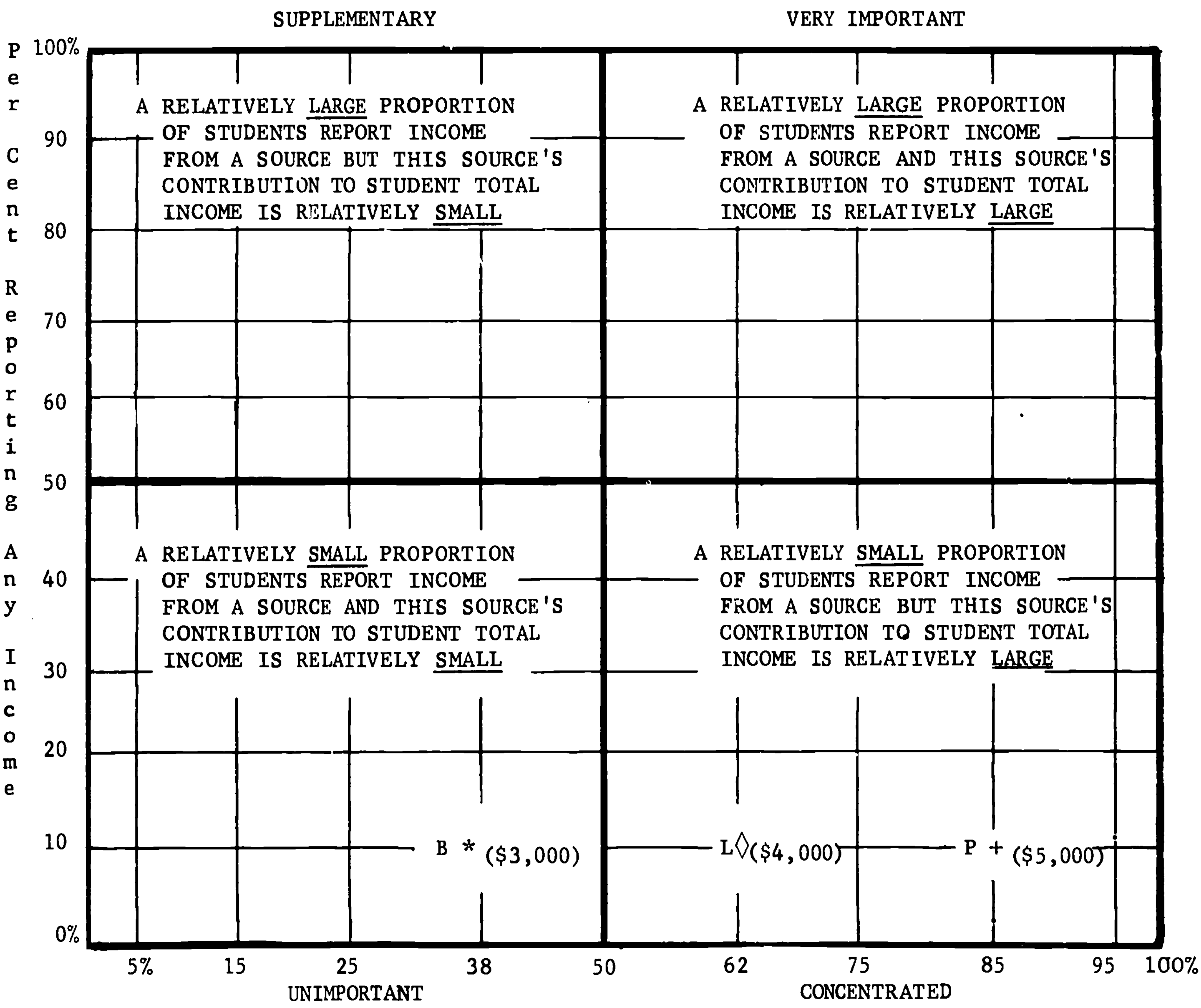
Data in Table 5.1 refer to the proportion of students receiving any income from specific sources and the median cash value of the specific source among these students. In his discussion of graduate student incomes, Davis (1962, p. 39) showed that the intensity of an economic source was also valuable for an understanding of students' resources. By "intensity" he meant the proportion of a student's total income derived from any specific source. The measure of intensity combined two items: frequency of occurrence and the importance of its contribution to total income. This should present a more complete picture of the economics of graduate study.

The vertical dimension of Charts 1 through 6 indicates the proportion of students reporting any income from a given source. This is the frequency of occurrence. The horizontal scale shows the median contribution to the total income of each of four sources, among those students who report any income from each source.

> When we think of a given source as being "important," we probably mean either that it is quite common or, regardless of its frequency, it is a major source of income for those who receive it. . . . We can then think of four basic kinds of sources: 1. Very important: sources which are both frequent and yield a high proportion of the total income among recipients; 2. Supplementary: sources which are rather common but bring in only a low proportion of the total income of the recipients; 3. Concentrated: sources which are relatively infrequent but which contribute a high proportion of the incomes of those who have access to them; 4. Unimportant: sources which do not occur very often and which, when they do, account for only a low proportion of the income of recipients (Davis, 1962, p. 39).

Fifty per cent was selected to distinguish between "high" and "low" levels of: (1) any income from a given source and (2) importance of the contribution of the income from a given source. Thus any sources reported by 50 per cent or more of a group of students and contributing

EXPLANATORY CHART




Proportion of Total Income from Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| Legend | | |
|---|---|---|
| Non-alphanumeric symbol indicates sources of support.<br><br>* = Total stipends<br>◊ = Self-employment<br>+ = Spouse's income | Alphanumeric symbol indicates academic or non-academic control variable.<br><br>B = Behavioral science students<br>L = Life science students<br>P = Physical science students | ($3,000) - Amount in parentheses indicates median cash value of source. |

50 per cent or more to the total income were considered very important; those reported by less than 50 per cent but contributing more than 50 per cent to the total income were concentrated; those reported by more than 50 per cent but not contributing at least 50 per cent to the total income were supplementary; and those sources less than 50 per cent on both dimensions were categorized as unimportant. Also included in the charts, in parentheses, were the median incomes for a given source among a given group of students (see Explanatory Chart).

Chart 5.1 shows the importance of four sources of income (stipends, self-employment, spouse's employment, and gifts from parents or relatives) by composite field of study. As expected, income derived from stipends and income from employment were both very important; income derived from spouse's employment and gifts from parents or relatives were unimportant.

Students in the sciences and humanities reported approximately similar total incomes (roughly \$4,300-\$4,800). Students in engineering, however, had considerably higher median incomes (\$7,900). For both stipends and employment, the higher the proportion of students reporting income from each source, the larger the median cash value reported. For example, 80 per cent of life science students reported income from stipends having a median value of \$2,600, while only 46 per cent of humanities students had stipends having a median of \$2,000. Engineering students were most likely to report employment income (76 per cent), and their median earnings were highest (\$7,500), while life science students were least likely to have had employment income (40 per cent), and their earnings from nonstipend employment were lowest (\$2,000).

Although stipends and nonacademic employment were very important sources of income for the American graduate students in this survey, there was variation by composite field of study. The very important sources within each field, listed in order of importance, were:

| | |
|---|---|
| Life sciences | stipends |
| Physical sciences | stipends and nonstipend employment |
| Behavioral sciences | stipends and nonstipend employment |
| Engineering | nonstipend employment and stipends |
| Humanities | nonstipend employment |

Thus all the possible patterns occurred: stipends were <u>the</u> primary source of support among life science students. Physical and behavioral science students relied most heavily on this source, although they also reported nonstipend employment as <u>very important</u>. Engineering students reported relying most heavily on nonstipend employment, although stipends were also <u>very important</u>. Humanities students reported only nonstipend employment as a <u>very important</u> source of income.

Chart 5.1 further shows that income derived from spouse's employment was <u>concentrated</u> for students in the fields of life and behavioral sciences and the humanities. This was most likely a function of the higher proportion of female students in these three fields. Also, no appreciable variation in proportion of gifts from parents or relatives occurred by field of study.

Students in the life, physical, and behavioral sciences reported that their primary (although not necessarily sole) source of support was their stipend. Graduate engineering students were different, because a B.S. in engineering generally has been considered sufficient academic training to qualify for full-time employment. Indeed, there is considerable competition for new engineers at lucrative salaries.[2] While a majority of the students in this field held stipends with a median income of $2,200, a larger proportion (76 per cent) were employed, deriving a median income from this employment of $7,500. Either part-time employment on engineering jobs is exceptionally high or (as comments in the questionnaires lead us to believe) many employers will continue to pay their engineers to return to graduate school for advanced study. Humanities was the sole field in which stipend support was not classified as very important. For whatever reasons, stipend donors in 1963 concentrated on other fields, and students in the humanities (i.e., history and English) reported income from other sources.

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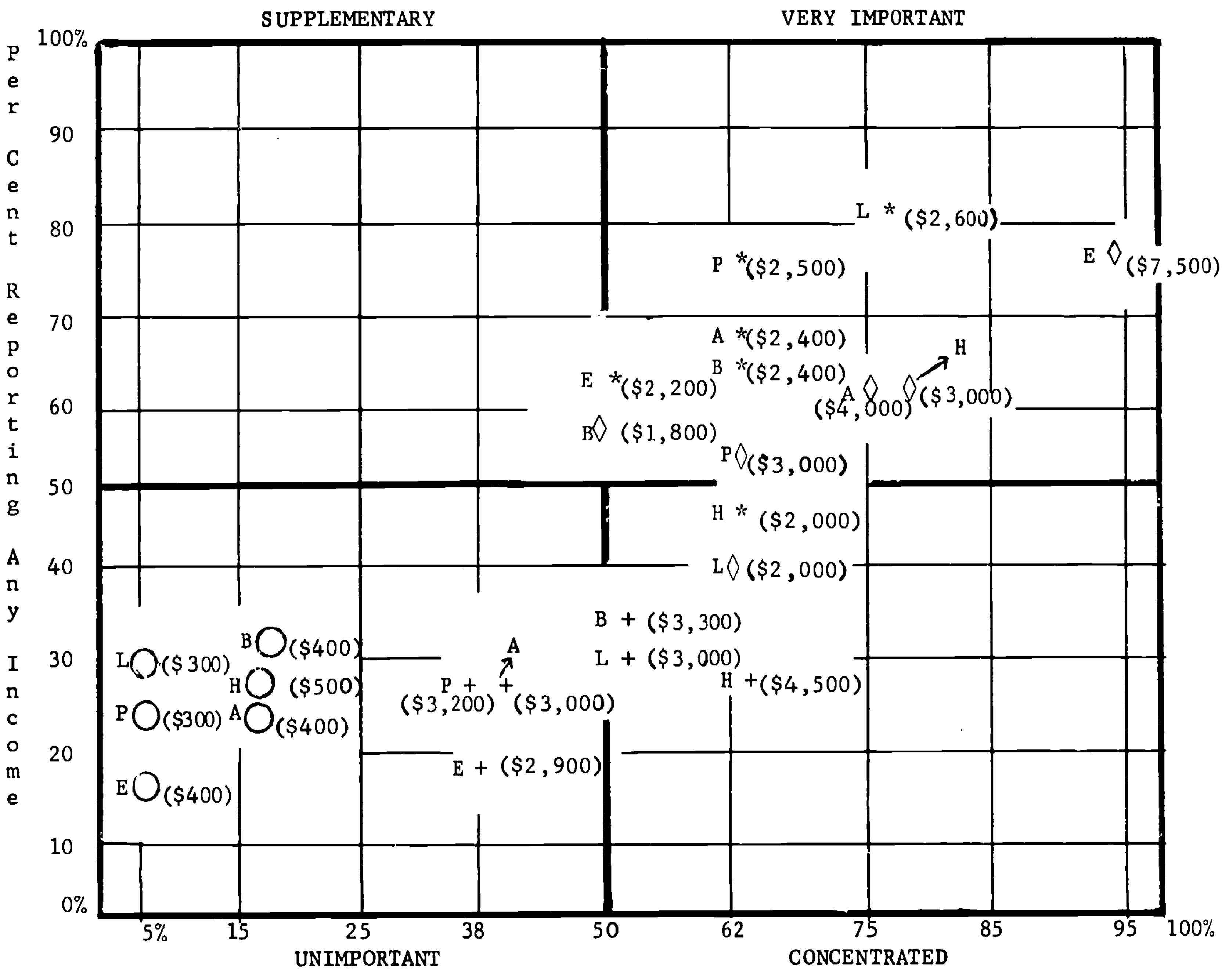
[2]Many advertisements for engineers with only a B.S. indicate starting salaries much higher than those reported here. The contemporary phenomena of on-campus recruiting of graduating seniors also testifies to the availability of jobs for engineering students.

CHART 5.1

INTENSITY OF SOURCES OF INCOME, BY COMPOSITE FIELD OF STUDY



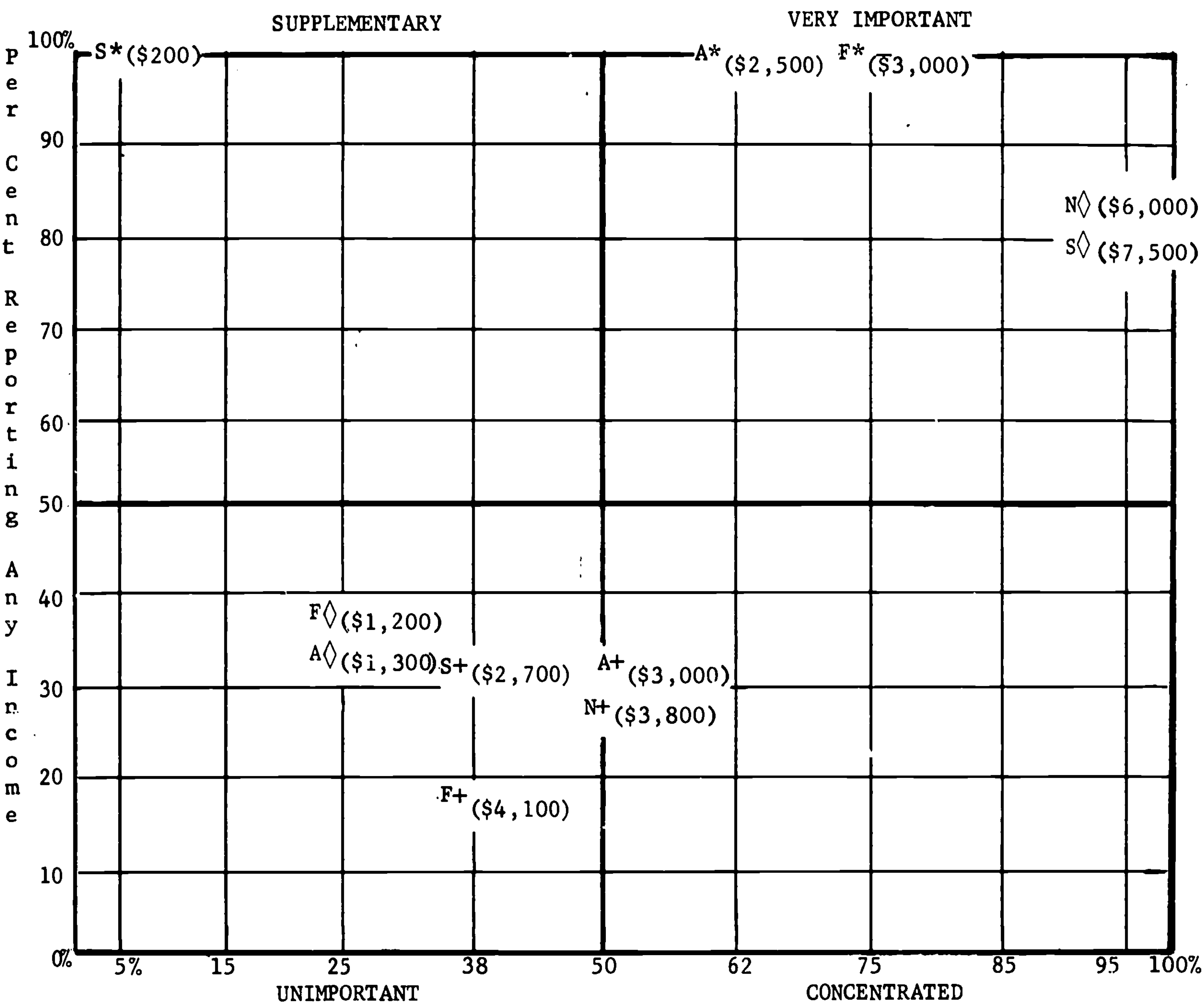

Proportion of Total Income from Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

LEGEND

| SOURCES OF INCOME | FIELD OF STUDY |
|---|---|
| * = Total stipends | P = Physical science |
| ◊ = Self employment | E = Engineering |
| + = Spouse's income | L = Life science |
| ◯ = Parent's gifts | B = Behavioral science |
| | H = Humanities |
| | A = All fields of study |

CHART 5.2

INTENSITY OF SOURCES OF INCOME BY STIPEND HOLDING AND TYPE OF FIRST STIPEND HELD




Proportion of Total Income From Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| Legend | |
|---|---|
| <u>Sources of Support</u> | <u>Stipend Holding/Type of First Held</u> |
| * = Total stipends | N = No stipends held |
| ◊ = Employment | S = Scholarship |
| + = Spouse's income | F = Fellowship |
| | A = Assistantship |

Correlates of Sources of Income

Prior analysis has shown that important variations existed among these fields of study in rates of stipend holding, types of stipends held, enrollment, stage of study, and quality of graduate school. We now examine the relationship between these characteristics and the primary sources of student income: stipends, nonstipend employment, and spouse's income.

We first consider stipend holding and type of first stipend. Types of stipends have been collapsed into three groups--assistantships, fellowships, and scholarships. Table 5.2b shows that students who held scholarships as their first stipend showed a profile more akin to students who did not hold stipends, in terms of pattern of sources of income and median of total income, than to students holding other types of stipends.

Chart 5.2 indicates that nonstipend employment was the only source classified as very important for scholarship holders and those without stipends. Among students holding fellowships or assistantships only stipends were classified as very important. It is surprising to learn that scholarship holders earned more from nonstipend employment and had higher total incomes than students not holding stipends, and that students with fellowships had higher total incomes than students with stipends requiring duties (see Table 5.2b).

Students holding fellowships seemed to have had the most advantageous situation in graduate school, in terms of stipend income. Although their total income was as not as high as that shown for scholarship recipients, it certainly was not so low as to cause serious inconveniences in living. Scholarship students and those without stipends, as we know, were not likely to be enrolled in school full time (31 and 33 per cent were full time, compared to 78 per cent of the fellows and assistants). They maximized their immediate earning capacity at the expense of rapid progress through graduate school. Fellowship holders had a higher median income ($4,800) than students whose stipends required duties ($3,900). However, the long-term effects of these disparities are indeterminate: research and teaching duties may lead to more thorough training, and lower total income may spur students

TABLE 5.2

SELECTED ACADEMIC AND NONACADEMIC CHARACTERISTICS, MEDIAN TOTAL INCOME, AND MEDIAN INCOME FROM SELECTED SOURCES

| Selected Characteristics | Median | | | | Total N[a] | NA |
|---|---|---|---|---|---|---|
| | Total Income | Stipend Income | Employment | Spouse's Income | | |
| a) Field of Study | | | | | | |
| Physical science . . . . | $4,800 | $2,500 | $3,000 | $3,000 | 1,617 | |
| Engineering . . . . . . . | 7,900 | 2,200 | 7,500 | 2,900 | 1,328 | |
| Life science . . . . . . | 4,300 | 2,600 | 2,000 | 3,000 | 1,004 | |
| Behavioral science . . . | 4,800 | 2,400 | 1,800 | 3,300 | 1,055 | |
| Humanities . . . . . . . | 4,700 | 2,000 | 3,000 | 4,500 | 932 | |
| Total . . . . . . . . . | 5,200 | 2,400 | 4,000 | 3,200 | 5,936 | |
| b) Stipend Holding | | | | | | |
| No stipend . . . . . . . | 6,900 | --- | 6,000 | 3,800 | 1,988 | 87 |
| Scholarship . . . . . . . | 8,000 | 200 | 7,500 | 2,700 | 650 | |
| Fellowship . . . . . . . | 4,800 | 3,000 | 1,200 | 4,100 | 1,100 | |
| Assistantship . . . . . . | 3,900 | 2,500 | 1,300 | 3,000 | 2,101 | |
| | N = 5,936 | | | | | |
| c) Enrollment Status | | | | | | |
| Full time . . . . . . . . | 4,000 | 2,700 | 1,200 | 3,000 | 3,279 | 187 |
| Part time . . . . . . . . | 7,300 | 1,300 | 7,000 | 3,600 | 2,470 | |
| | N = 5,936 | | | | | |
| d) Stage of Study | | | | | | |
| Master's: I . . . . . . | 4,700 | 2,000 | 3,000 | 3,000 | 2,246 | 623 |
| II . . . . . . | 5,400 | 2,200 | 5,000 | 5,000 | 1,226 | |
| Doctorate: III . . . . . | 5,300 | 2,600 | 2,600 | 3,500 | 709 | |
| IV . . . . . | 5,200 | 3,100 | 2,700 | 2,800 | 1,132 | |
| | N = 5,936 | | | | | |

TABLE 5.2--Continued

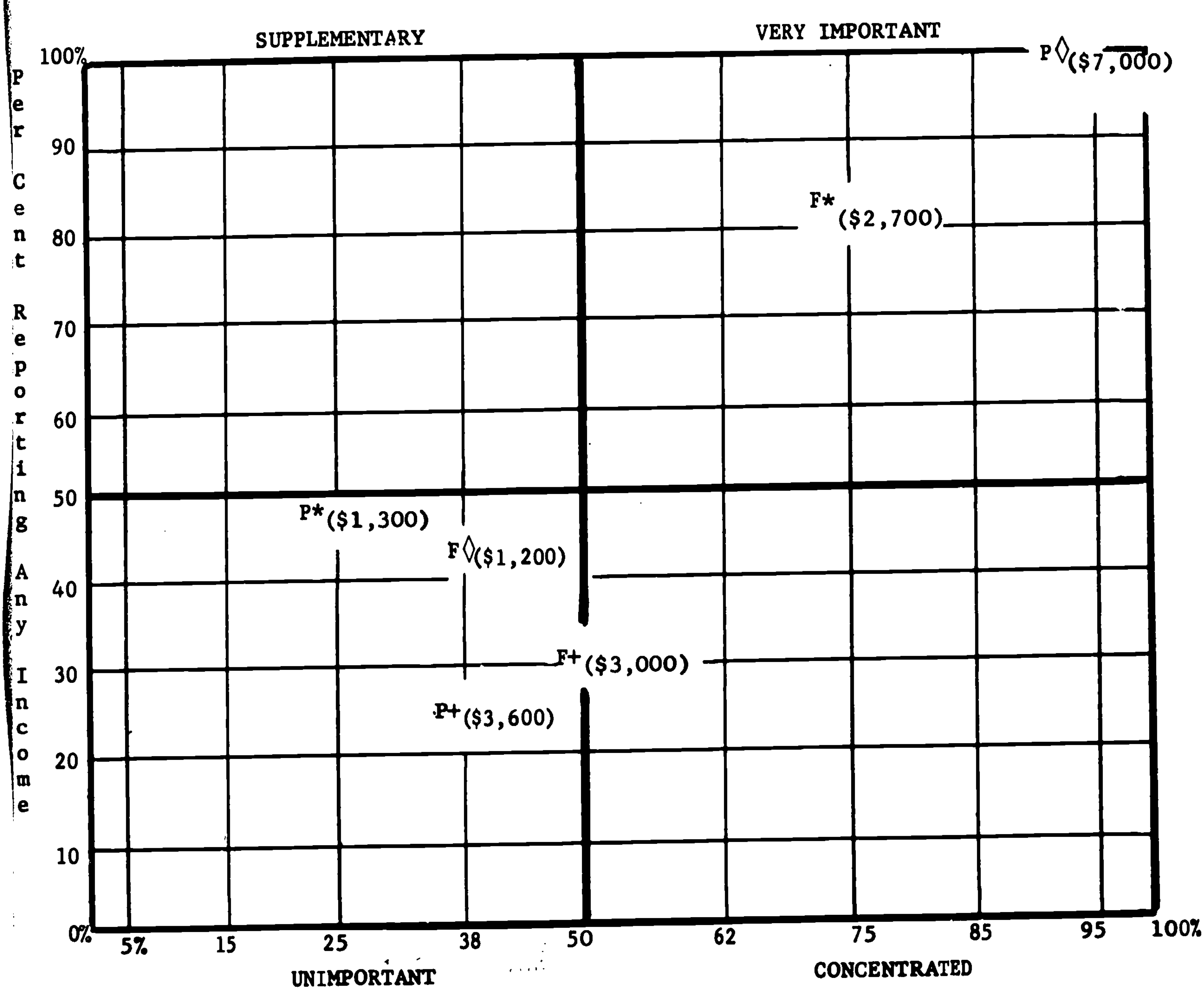
| Selected Characteristics | | Median Total Income | Median Stipend Income | Median Employment | Median Spouse's Income | Total N[a] | NA |
|---|---|---|---|---|---|---|---|
| e) Field of Study | School Quality | | | | | | |
| Physical science | Group I . . | $4,300 | $3,000 | $1,300 | $3,000 | 296 | |
| | Group II . | 4,200 | 2,800 | 1,600 | 3,100 | 525 | |
| | Group III . | 5,500 | 2,100 | 6,000 | 3,000 | 774 | |
| Engineering | Group I . . | 5,500 | 3,000 | 2,400 | 2,600 | 257 | |
| | Group II . | 7,600 | 2,300 | 7,300 | 2,800 | 418 | |
| | Group III . | 8,000 | 1,400 | 8,000 | 3,000 | 633 | |
| Life science | Group I . . | 4,200 | 3,000 | 900 | 3,000 | 163 | |
| | Group II . | 4,200 | 2,700 | 2,200 | 3,200 | 270 | |
| | Group III . | 4,300 | 2,400 | 2,800 | 3,000 | 514 | |
| Behavioral science | Group I . . | 4,500 | 2,700 | 1,800 | 3,300 | 209 | |
| | Group II . | 4,900 | 2,500 | 1,800 | 3,300 | 365 | |
| | Group III . | 4,800 | 2,100 | 2,500 | 3,400 | 475 | |
| Humanities | Group I . . | 4,200 | 2,400 | 1,500 | 3,600 | 192 | |
| | Group II . | 3,800 | 2,100 | 1,800 | 3,100 | 270 | |
| | Group III . | 5,000 | 1,800 | 4,300 | 5,000 | 447 | |
| | N = 5,808 | | | | | | |
| f) Family Role | | | | | | | 131 |
| Men | Single . . | 3,200 | 2,400 | 1,500 | --- | 1,758 | |
| | Husband . . | 6,900 | 2,500 | 2,500 | 3,500 | 1,016 | |
| | Father . . | 7,000 | 2,500 | 7,200 | 1,700 | 2,030 | |
| Women | Single . . | 3,200 | 2,200 | 3,600 | --- | 573 | |
| | Wife . . . | 6,700 | 2,200 | 2,100 | 4,300 | 159 | |
| | Mother . . | 9,500 | 2,100 | 3,000 | 7,600 | 242 | |
| | N = 5,936 | | | | | | |

| | | | |
|---|---|---|---|
| School N . . | 5,808 | Student N . . | 5,936 |
| | | Aliens N . . | 878 |
| | | Total N . . | 6,814 |

[a]The medians are based on the number of students reporting <u>any</u> income from a specific source. The N's may be derived from Table 5.1.

CHART 5.3

INTENSITY OF SOURCES OF INCOME BY ENROLLMENT STATUS DURING SPRING, 1962-1963




Proportion of Total Income From Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| Legend | |
|---|---|
| **Sources of Support** | **Enrollment Status** |
| * = Total stipends | F = Full-time student |
| ◊ = Self-employment | P = Part-time student |
| + = Spouse's income | |

holding assistantships to faster degree completion, regardless of enrollment discrepancies.

Given the close connection between enrollment status and stipend holding during the spring of 1962-63, stipend income should be an important component of total income among full-time students.[3] Income from nonstipend employment should be equally important among part-time students. Chart 5.3 and Table 5.2c indicate this is indeed the case. Among full-time students only stipend income was very important: 81 per cent held stipends. This source contributed a median of 75 per cent of total income, and the median cash value of all stipends held was $2,700. Income derived from nonstipend employment was unimportant, and income derived from spouse's employment was on the borderline between concentrated and unimportant. However, total median income of the full-time students was $4,000 (see Table 5.2). This was $1,300 more than the median stipend value (Chart 5.3), which indicates that a combination of sources was used by most of these students to achieve their total incomes. A variety of sources, then, were associated with full-time study.

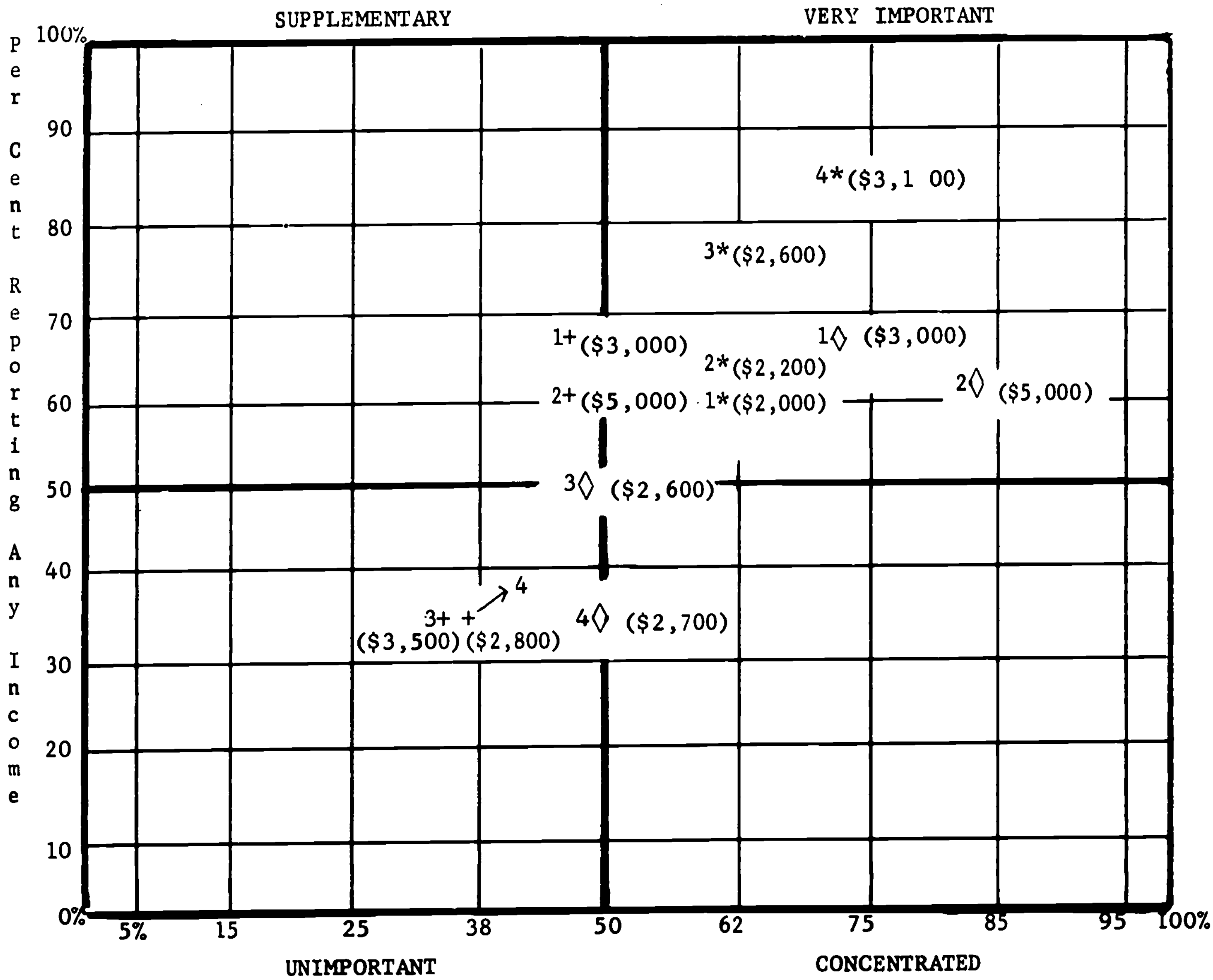
The above conclusion is particularly true if full-time and part-time students are compared; the primary source of income of students enrolled part time was nonstipend employment. Ninety-four per cent were so employed, and this source contributed over 90 per cent of their total income. The other two sources were both categorized as unimportant, and both were less important for part-time than for full-time students. Thus part-time students, who were more likely to work, derived a larger proportion of their income from a single source than did full-time students. Studying or working for a degree did not yield immediate economic rewards; but part-time pursuit of advanced degrees while committing time to nonacademic endeavors produced greater immediate financial benefits. Chapter 3 showed that many part-time students had family responsibilities and presumably needed the higher income permitted by part-time study.

We have considered student sources of income, the frequency of their occurrence, the proportion of each in its contribution to total

[3]See Chapter 3 for the classification of full-time and part-time enrollment.

## CHART 5.4

### INTENSITY OF SOURCES OF INCOME BY ACADEMIC STAGE OF STUDY




Proportion of Total Income From Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

**Legend**

| Sources of Support | Stage of Study | |
|---|---|---|
| * = Total stipends<br>◊ = Self-employment<br>+ = Spouse's income | 1 = Students enrolled less than one academic year<br>2 = Students enrolled more than one academic year and who are seeking master's degree | 3 = Students enrolled more than one year, seeking doctorate, but not working on thesis<br>4 = Students enrolled more than one year, seeking doctorate and are working on thesis |

income, and the median cash value of each source. Total income varied by field of study, stipend holding, type of stipend, and enrollment status. Next, we consider whether sources of income varied in importance among students at various stages of graduate study.

Total median income did not vary by stage of study (Chart 5.4 and Table 5.2d), with the one exception that students in Stage I had a median total income of $4,700, the corresponding median among Stage II students amounting to $5,400. The total income of students at each stage of study was very close to the average for all students in the sample--$5,200. The sources which contributed to these totals, however, varied considerably and consistently. Stipend income was a more important source of support as stage of study advanced, while other sources, employment, and income from spouse's employment decreased in importance with each successive stage of study (Chart 5.4).

For example, stipend income increased from Stages I to III in frequency of occurrence and median value of stipends, but in Stage IV frequency of occurrence, median value, and proportion of total income all increased.

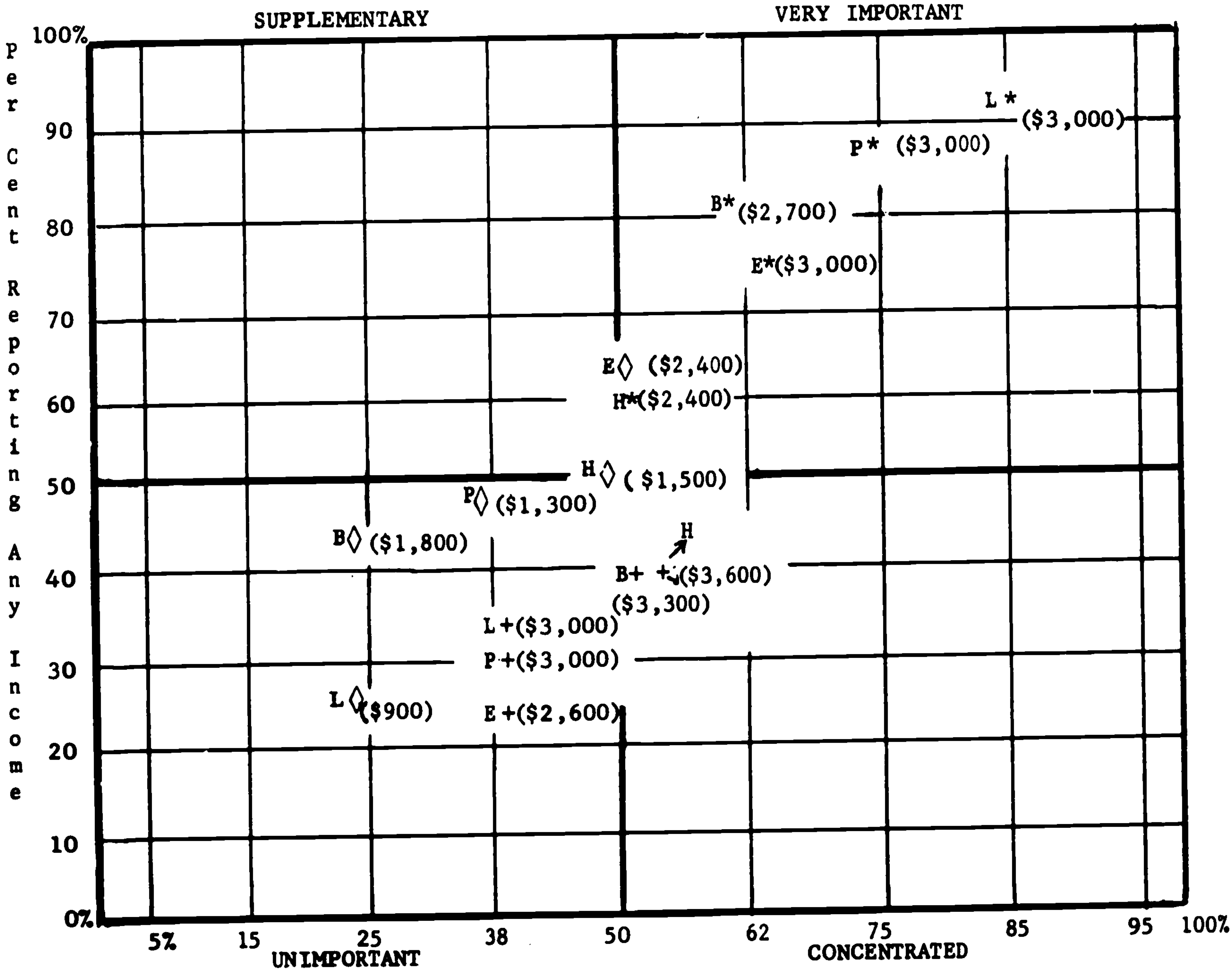
Several points deserve comment here. As seen from Chart 5.4, among students in Stage IV, the only very important source of support was stipends. Students in Stages I and II had three very important sources, and of the three, nonstipend employment was the single most important source. We have also shown that income from spouse's employment (a source of support unimportant in understanding field of study, stipend holding, or enrollment status) was of considerable importance in understanding the economics of academic progress. Thus students in earlier stages of academic study utilized a wide variety of sources of support, but stipends were not the most important of these sources. On the other hand, students in advanced stages derived their incomes from a single source and therefore relied heavily on this source in terms of total income derived from it.

Care should be taken in interpreting the above findings, as there are several equally valid interpretations. It is possible that stipends were far more likely to go to doctoral candidates than master's candidates, or that students at the master's candidate levels were less

CHART 5.5

INTENSITY OF SOURCES OF INCOME AND FIELD OF STUDY
CONTROLLING FOR QUALITY OF GRADUATE SCHOOL

a) Students Attending Group I Schools




Proportion of Total Income From Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| Legend | |
|---|---|
| Sources of Support | Field of Study |
| * = Total stipends<br>◊ = Self-employment<br>+ = Spouse's income | P = Physical science<br>E = Engineering<br>L = Life science<br>B = Behavioral science<br>H = Humanities |

committed to pursuing graduate training on a full-time basis than were students seeking their doctorates. We do not know whether it is student commitment to graduate school or institutional preferences for students seeking the doctorate which determines the frequency and proportion of income derived from stipends. Most likely it is an interplay of the two.

Turning next to the relationships among sources of income, school quality, and field of study,[4] several general findings emerge from Table 5.2e and Chart 5.5a, b, and c.

1. With the exception of students in life sciences there was an inverse relationship between cash value of total median income and school quality. The higher the quality of the school, the lower the total median income among the students in any given field of study. The strength of this relationship varied by field, being greatest in engineering fields and least in behavioral sciences fields.

2. The proportion of students holding stipends and the median value of all stipends held decreased as school quality declined, although the magnitude of this relationship for both proportion of income and median value of stipends varied by field of study. The relationship was least noticeable in the life sciences and most noticeable in humanities and engineering. The median cash value of total stipends especially varied inversely with school quality.

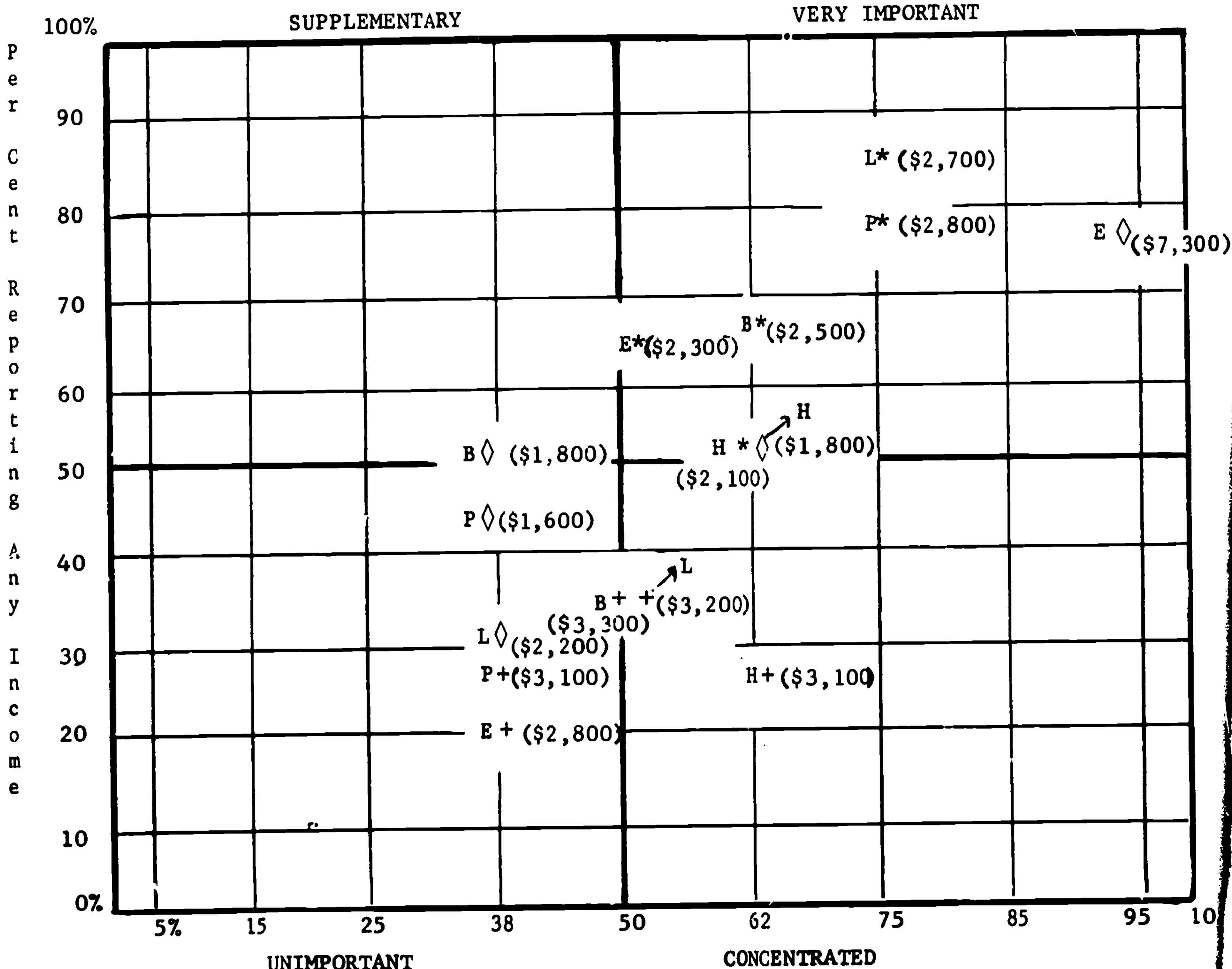
3. Within each level of school quality there was a stable rank ordering of fields: Students in the life sciences held more valuable stipends than behavioral scientists, etc. Furthermore, stipends contributed proportionally more to the total income of students in life sciences, followed respectively by students in physical sciences, behavioral sciences, engineering, and humanities at each level of institutional quality.

[4] The findings presented below are subject to the limitations discussed in Chap. 4, n. 4.

CHART 5.5

INTENSITY OF SOURCES OF INCOME AND FIELD OF STUDY CONTROLLING FOR QUALITY OF GRADUATE SCHOOLS

b) Students Attending Group II Schools




Proportion of Total Income from Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| LEGEND | |
|---|---|
| Sources of Support | Field of Study |
| * = Total stipends | P = Physical science |
| ◊ = Self-employment | E = Engineering |
| + = Spouse's income | L = Life science |
| | B = Behavioral science |
| | H = Humanities |

4. However, very important sources of income varied considerably by field of study and school quality. Shown below in order of importance are the sources of income classified as very important for each field of study within each quality level.

| Field of Study | School Quality | | |
|---|---|---|---|
| | Group I[a] | Group II | Group III |
| Life science . . . | Stipend | Stipend | Stipend |
| Physical science . | Stipend | Stipend | Employment, stipend |
| Behavioral science | Stipend | Stipend | Employment, stipend |
| Engineering . . . | Stipend, employment | Employment, stipend | Employment |
| Humanities . . . . | Stipend | Stipend, employment | Employment |

[a]In high quality schools employment was classified as unimportant in all fields of study except engineering.

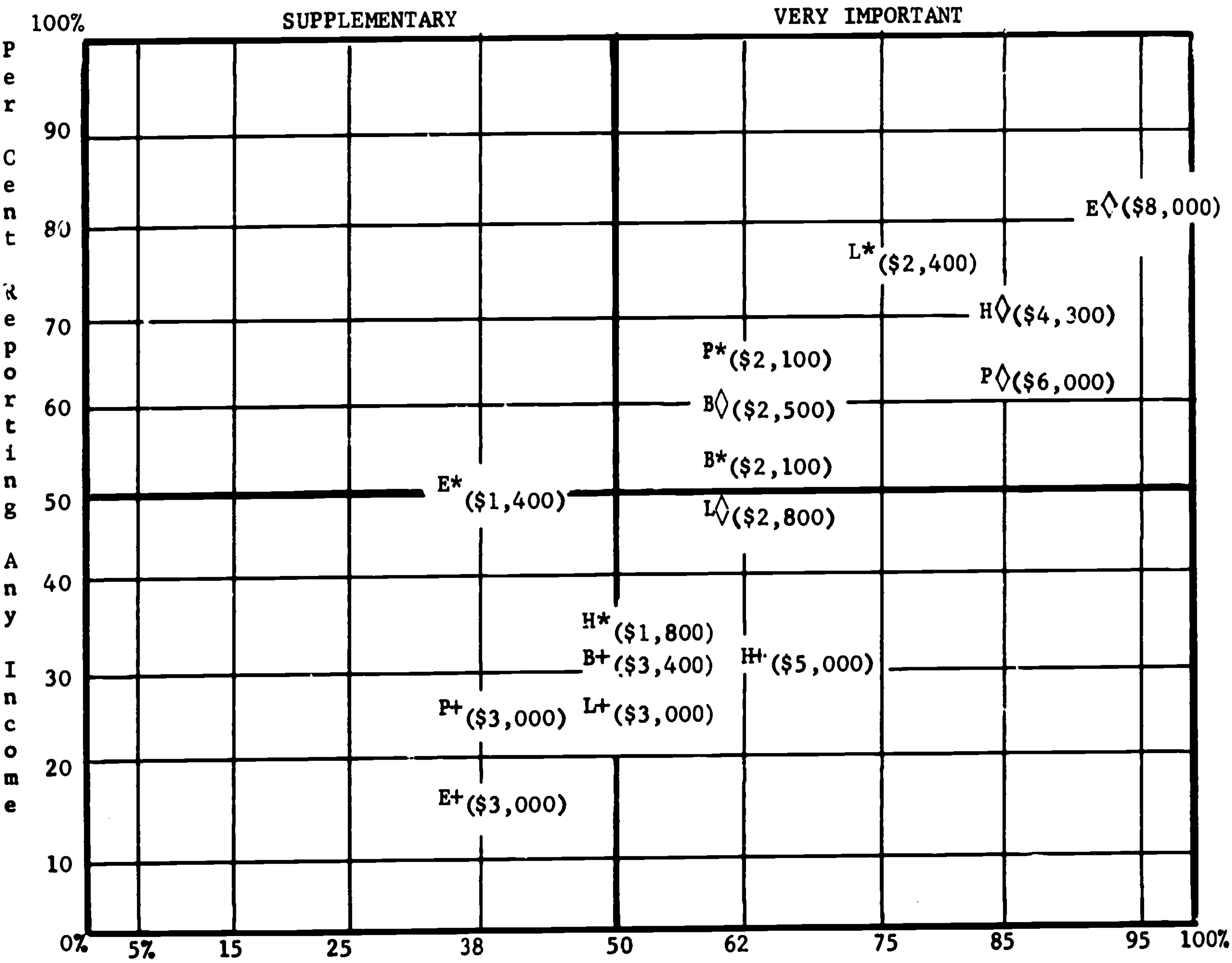
In high quality schools income from stipends was classified as the most important source of income in all five fields, although income from employment also was very important in engineering. In schools of medium quality, stipend income was found to be the single most important source in the life, physical, and behavioral sciences. This was the case for stipends and employment in the humanities. Employment ranked higher than stipends in engineering, although both were very important sources. In the remaining schools, only in life sciences were stipend sources identified as the only very important source. In all the other fields, employment, either alone or with stipend income, was found to be the primary source of support.

Although we have discussed income from spouse's employment as a source of income, we have not analyzed it in as much detail as it deserves. Thus far we have focused only on spouses as sources of income. To fully understand the effect of this source it is necessary to consider

CHART 5.5

INTENSITY OF SOURCES OF INCOME AND FIELD OF STUDY, CONTROLLING FOR QUALITY OF GRADUATE SCHOOL

c) Students Attending Group III Schools




Proportion of Total Income from Each Source (among at Least 50 Per Cent of Each Specific Group of Students)

| Legend | |
|---|---|
| Sources of Support | Field of Study |
| * = Total stipends | P = Physical science |
| ◊ = Self-employment | E = Engineering |
| + = Spouse's income | L = Life science |
| | B = Behavioral sicence |
| | H = Humanities |

the student's sex, marital status, and number of dependents, jointly referred to as "position in the life cycle."

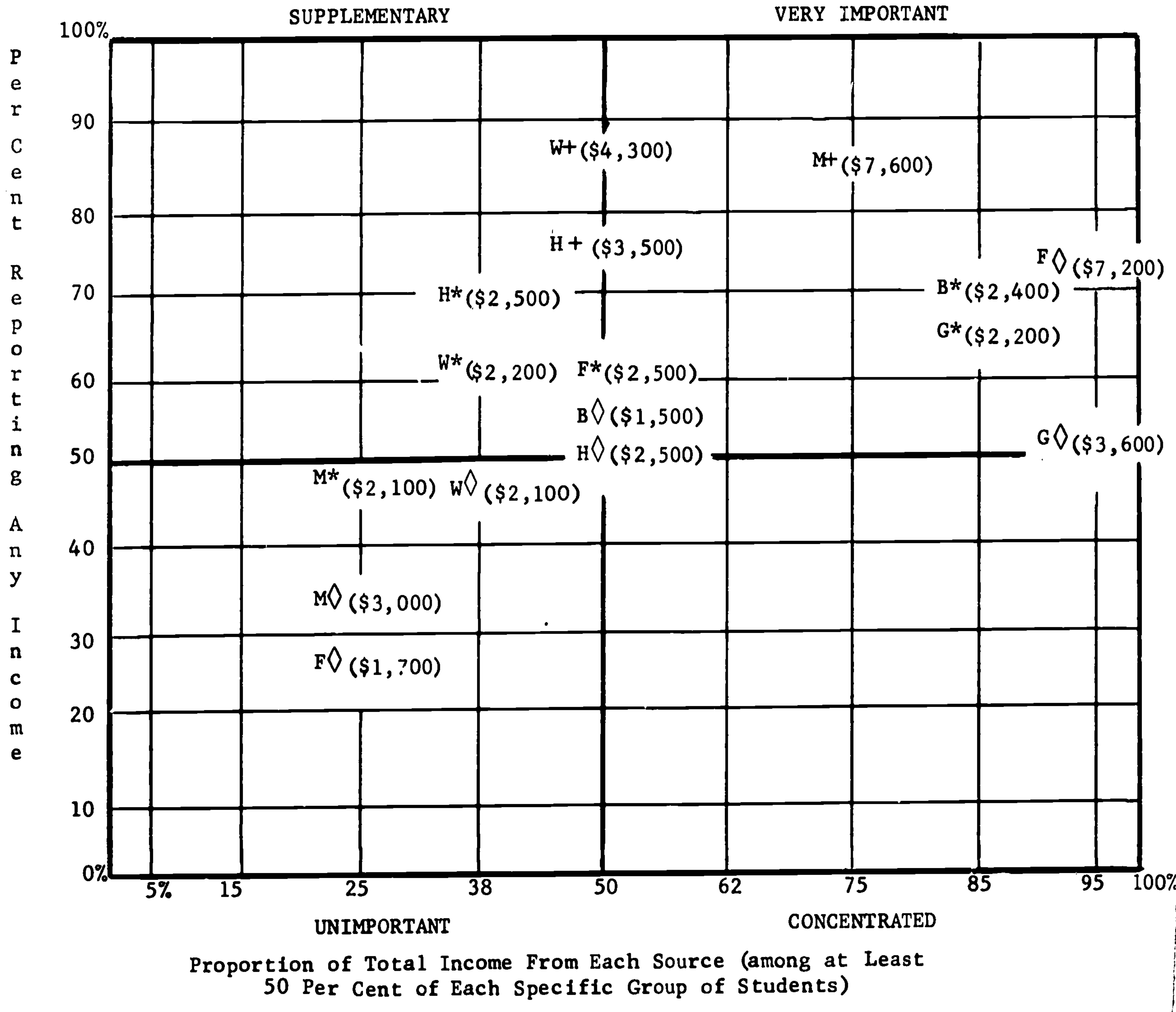
Single students, through inexpensive living arrangements (e.g., dormitory living or sharing quarters with other single students), are able to reduce their expenses to a minimum, and thus manage on considerably less income than married students. Students who are married but do not yet have children may have working spouses providing a steady source of income to help defray loss of income while in school. However, since men are expected to work if married, and because the earning capacities of men and women are unequal, we would expect spouse's income to be a less important source of income among male than among female students. Having children further complicates the picture. Mothers must at least care for children until they are old enough to attend school or be partially self-reliant. Fathers are the family breadwinners and, furthermore, are expected to earn enough so the family does not want for necessities. Thus a student's level of living, in terms of cash income and the resources available, should vary depending on life cycle position.

Data concerning the economic situation of students in each stage of the life cycle are shown in Table 5.21 and Chart 5.6. Single female and male students were heavily dependent on stipends and nonstipend employment for their income; both these sources were very important. Similar proportions of single men and women received income from stipends (72 per cent and 65 per cent), and their median cash values were also quite similar ($2,400 and $2,200), but such was not the case for employment. Although roughly 50 per cent of each sex were employed in nonstipend jobs, the median cash value and proportion of this source's contribution to the total income were quite different, and, strangely enough, in favor of the single women. They earned over twice as much as bachelors.

Since both stipend and total income of men and women were about the same, and employment income was quite different, single women with low income stipends must have had high employment income, and vice versa. Despite this incongruity, single male and female graduate students had far more in common with each other economically than they did with members of the same sex in different family roles.

CHART 5.6

INTENSITY OF SOURCES OF INCOME BY ROLE IN LIFE CYCLE




| Legend | |
|---|---|
| **Sources of Support** | **Role of Life Cycle** |
| * = Total stipends<br>◊ = Self-employment<br>+ = Spouse's income | B = Single male<br>H = Husband — Men<br>F = Father |
| | G = Single female<br>W = Wife — Women<br>M = Mother |

Although student husbands and wives were similar in sources of incomes and total income level, some differentiation between the two existed. Nonstipend income and income from their spouse's employment were classified as very important among husbands; among wives, this was the case only for their husband's income. Among both sexes, stipend income was supplementary. Furthermore, median incomes were quite similar. Thus student husbands and wives were economically similar except that student husbands contributed more to family income than did student wives.

In contrast to the two preceding sets of family roles, student fathers and student mothers were, economically speaking, almost polar opposites. For student mothers, graduate education seems to be a luxury based on their husband's wealth. Student wives reported a total income of $9,500, most of which came from their husband's employment. Only this source was classified as very important; the two other primary sources of income were unimportant. Median income was $2,500 less for student fathers, much closer to the median income level reported by student husbands. In contrast with the student mothers, the primary sources of support among student fathers was their nonstipend employment and stipend income. Of these two, however, the most important was nonstipend employment. Furthermore, the wives of student fathers contributed less from their employment than did mothers who were students (probably because these mothers had older children and were thus employable).

Family role, then, was an important factor in understanding the economics of graduate training. With increasing family responsibility men and women increasingly differed in the sources of income and proportions of total income derived from specific sources. The more they were involved in family responsibility, the less men were likely to be totally dependent on academic sources of income.

## Summary

The median total income of graduate students enrolled for advanced degrees in spring, 1963, in five composite fields of study amounted to $5,200. Two out of three students reported stipend income; nearly six out of ten (57 per cent) secured income from nonstipend employment; and nearly three out of ten (28 per cent) also secured income from their spouse. Among those securing income from any of these sources, the data show that the median from nonstipend employment was $4,500, from spouses $3,200, and from stipends $2,400. Gifts from parents or relatives were relatively infrequent; when reported, the median dollar amount from this source was $400.

Substantial variations by field of study were shown both with respect to the proportion reporting income from any of these sources, and in the proportion of total income derived from any of these sources. Stipends and nonstipend employment were identified as the two very important sources of income on the basis of criteria developed in this chapter: stipends were very important among the sources of income of life science students, nonstipend employment among humanities students, and combinations of the two in the physical and behavioral science fields and in engineering. Variations in patterns of income were also identified when students were classified by type of first stipend held in 1962-63, level of enrollment, institutional quality of school attended, and by family role.

# CHAPTER 6

## EXPENSES AND LOANS

Academic and living expenses during graduate school require cash outlays. Students cannot register in school, purchase books, pay the rent, or eat without having cash. If they borrow funds to meet some or all of these expenses it implies that they expect their earning capacity after graduate school to permit repayment of loans.[1] Graduate training is considered in this chapter in terms of expenditure and loans.

Expenses were divided into two categories: academic and living. Academic expenses consist of tuition and fees, books, instruments, and thesis costs. Tuition and fees were divided into those covered by stipends and those not so covered. Nonacademic expenses consisted of the various expenses necessary for living--food, rent, health, transportation, and other general living expenses.

The first section considers academic expenses: how much students spent on academic necessities, and the degree to which stipend income played a role in meeting these expenses. The median of all academic expenses and the median tuition and fees expenses are reported as well. In the second section we consider nonacademic costs. Did students who had higher incomes spend more on food, clothing, rent, health, and transportation. The third section describes the loans students used to supplement their stipend and other income. Who borrowed money, and where, is of central concern. Did students seeking loans differ from others in academic and nonacademic characteristics? Did students borrow or did they prefer not to?

Since rates of stipend holding differed by field of study, we now ask if the same relationship holds with respect to the chances of borrowing money. Alternatively, other factors such as life role or employment could be major determinants of who borrows and how much.

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[1] See, for example, Schultz (1963).

## Academic Correlates of Academic Expense

### Academic Expenses

Academic expenses reported by the graduate students sampled in this survey were not great: the median was $400, and the median reported for tuition and fees was slightly less, $300 (Table 6.1). Furthermore, fully 88 per cent of the stipend-holding students reported that their stipends covered all their educational expenses. Since 66 per cent of the sample held stipends, it is safe to say that over one-half of the graduate students had all their academic expenses covered by stipends.

Cash outlays for academic expenses did not vary by field of study. However, the proportion of these expenses covered by stipends did: More than 90 per cent of the stipend holders in the physical, life, and behavioral sciences reported that their stipends covered all their academic expenses. Less than 80 per cent of the stipend holders in the engineering and humanities reported that all their academic costs were met by their stipends.

A detailed report of other academic expenses, books, instruments and supplies, and thesis preparation, was not warranted because students spent very little on academic expenses other than tuition and fees. In fact, the median cash outlay for all academic expenses other than tuition and fees was $100. The proportion of students reporting such costs, and their median value, did not vary significantly by composite field of study.

### Stipend Holding: Type of First Stipend

The median figures of all academic expenses, of tuition and fees, and of the proportion of academic expenses covered by stipends, varied by stipend holding and by type of first stipend held (Table 6.1b). Fellowship students were more likely to have greater academic costs and were more likely to have all these costs covered by stipend income than other students. Students holding stipends which required duties were quite similar to fellowship holders in this respect, although the similarity was greater in the proportion of academic expenses covered by stipends than in the magnitude of academic expenses. Fellowship students spent considerably more on academic items than did students holding stipends requiring duties. Differences between fellowship holders, students holding assistantships, scholarship recipients, and students not holding stipends were fairly marked on all three indicators of academic expenses.

A somewhat surprising finding is the degree to which scholarships failed to meet all the academic expenses incurred by these students: at least half the students holding scholarships indicated that 50 per cent or less of their academic costs were met by their scholarships. Thus a majority of the scholarships held among these students did not cover a significant proportion of academic costs. This suggests that scholarships are not primarily full-time grants and are of greater significance as honorary awards. In sum, the greater the stipend income the greater the academic costs. However, the opposite was not true: high academic expenses did not necessarily mean a large stipend income.

## Enrollment Status

Differences in academic expenses and in the proportion of these expenses covered by stipends were even greater when full- and part-time students were compared. The median value of all academic expenses and of tuition and fees was twice as large for full-time students ($600) as for part-time students ($300). Nearly five times as many part-time as full-time stipend holders did not have all their academic costs covered by stipend income: among stipend holders, 6 per cent of the full-time but 27 per cent of the part-time students were unable to cover all their academic expenses by means of stipends.

## Stage of Study

There were no significant differences in either total academic expenses or levels of tuition and fees by stage of study. It would seem highly unlikely that academic costs would vary greatly as students progress through the system. However, there was a difference in the proportion of expenses covered by stipend income, from stage to stage. The advanced students received a greater proportion of their academic expenses from stipends than did the less advanced students. This relationship increased for each stage of study, the greatest increase

## TABLE 6.1

### ACADEMIC EXPENSES AND STIPEND COVERAGE OF THESE EXPENSES BY SELECTED ACADEMIC AND NONACADEMIC CHARACTERISTICS

| Selected Characteristics | Median Academic Expenses | Median Tuition and Fees | Other Academic Expenses | | N | With Stipends Covering Less than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|---|---|
| | | | Any (Per Cent) | Median | | | | |
| a) Field of Study | | | | | | | | |
| Physical science . . . | $400 | $300 | 95 | $100 | 1,617 | 9 | 1,194 | |
| Engineering . . | 400 | 300 | 90 | 100 | 1,328 | 21 | 803 | |
| Life science. . | 400 | 300 | 95 | 100 | 1,004 | 8 | 803 | |
| Behavioral science . . . | 400 | 300 | 97 | 100 | 1,055 | 8 | 670 | |
| Humanities . . | 400 | 300 | 95 | 100 | 932 | 21 | 431 | |
| Total, five fields . . . | 400 | 300 | 94 | 100 | 5,936 | 12 | 3,901 | |

N . . . . . . . 5,936
Aliens . . . . 878
Total N . . 6,814

N . . . . . . . 3,901
Inapplicable. 2,035
Aliens . . . 878
Total N . . 6,814

| Selected Characteristics | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less Than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|
| b) Type of Stipend Field | | | | | | 87 |
| None . . . . . . | $300 | $200 | 1,988 | 0 | - | |
| Scholarship . . . | 400 | 300 | 650 | 63 | - | |
| Fellowship . . . | 700 | 400 | 1,110 | 2 | - | |
| Duties required . | 400 | 300 | 2,101 | 3 | - | |

N . . . . . . . . . 5,849
NA . . . . . . . . . 87
Aliens . . . . . . . 878
Total N . . . . 6,814

| Selected Characteristics | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less Than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|
| c) Enrollment Status | | | | | | 187 |
| Full time . . . . | 600 | 400 | 3,279 | 6 | 2,670 | |
| Part time . . . . | 300 | 200 | 2,470 | 27 | 1,148 | |

N . . . . . . . . . . . 5,749
NA . . . . . . . . . . . 187
Aliens . . . . . . . . 878
Total N . . . . . . 6,814

N . . . . . . . 3,818
NA, inapplicable 2,118
Aliens . . . . . 878
Total N . . . 6,814

TABLE 6.1--Continued

| Selected Characteristics | | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|---|
| d) Stage of Study | | | | | | | 623 |
| | I . . . . . | $400 | 300 | 2,246 | 17 | 1,338 | |
| | II . . . . . | 400 | 300 | 1,226 | 15 | 741 | |
| | III . . . . | 500 | 400 | 709 | 9 | 548 | |
| | IV . . . . . | 500 | 300 | 1,132 | 4 | 956 | |
| | | N . . . . . . . . . . . | | 5,313 | N . . . . . . . . | 3,583 | |
| | | NA . . . . . . . . . . | | 623 | NA, inapplicable | 2,353 | |
| | | Aliens . . . . . . . . | | 878 | Aliens . . . . | 878 | |
| | | Total N . . . . . | | 6,814 | Total N . . . | 6,814 | |
| e) Field of Study and School Quality, School Control | | | | | | | |
| Physical sciences | | | | | | | |
| Quality | Group I . | $800 | $700 | 296 | 2 | 260 | |
| | Group II . | 500 | 300 | 525 | 5 | 412 | |
| | Group III | 300 | 300 | 774 | 16 | 509 | |
| Control | Public . . | 400 | - | 936 | 5 | 745 | |
| | Private . . | 620 | - | 659 | 15 | 426 | |
| Quality | Group I | 800 | 700 | 257 | 10 | 189 | |
| | II | 500 | 400 | 418 | 19 | 276 | |
| | Group III | 300 | 200 | 633 | 28 | 332 | |
| Control | Public . . | 370 | - | 573 | 12 | 357 | |
| | Private . . | 640 | - | 735 | 28 | 437 | |
| Life sciences | | | | | | | |
| Quality | Group I . | 700 | 600 | 163 | 3 | 149 | |
| | Group II . | 500 | 300 | 270 | 5 | 231 | |
| | Group III | 400 | 300 | 514 | 13 | 390 | |
| Control | Public . . | 420 | - | 744 | 6 | 593 | |
| | Private . . | 1,060 | - | 203 | 18 | 163 | |

(Table 6.1--Continued)

TABLE 6.1--Continued

| Selected Characteristics | | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|---|
| e) Field of Study and School Quality, School Control--Continued | | | | | | | |
| Behavioral sciences | | | | | | | |
| Quality | Group I . | $800 | $600 | 209 | 6 | 172 | |
| | Group II . | 500 | 300 | 365 | 5 | 242 | |
| | Group III . | 300 | 300 | 475 | 14 | 258 | |
| Control | Public . . | 430 | - | 670 | 6 | 444 | |
| | Private . . | 850 | - | 379 | 13 | 217 | |
| Humanities | | | | | | | |
| Quality | Group I . | 700 | 600 | 192 | 18 | 116 | |
| | Group II | 400 | 300 | 270 | 19 | 143 | |
| | Group III | 300 | 300 | 447 | 24 | 166 | |
| Control | Public . . | 390 | - | 531 | 16 | 245 | |
| | Private . . | 560 | - | 378 | 26 | 172 | |

| | |
|---|---|
| N . . . . . . . . . | 5,808 |
| School inapplicable | 128 |
| Aliens . . . . . | 878 |
| Total N . . . . | 6,814 |

| | |
|---|---|
| N . . . . . . . . . | 3,799 |
| Inapplicable . . | 2,009 |
| School inapplicable | 128 |
| Aliens . . . . . | 878 |
| Total . . . . . | 6,814 |

| Selected Characteristics | | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|---|
| f) Employment Status | | | | | | | |
| Unemployed . . . . . | | 500 | 400 | 2,370 | 6 | 2,024 | |
| Full-time employment for . | 1-3 months | 500 | 400 | 1,719 | 8 | 1,238 | |
| | 4-9 months | 300 | 200 | 394 | 14 | 185 | |
| | 10-12 months | 200 | 200 | 1,453 | 54 | 454 | |

| | |
|---|---|
| N . . . . . . . . . | 5,936 |
| Aliens . . . . . | 878 |
| Total N . . . . | 6,814 |

| | |
|---|---|
| N . . . . . . . . | 3,901 |
| Inapplicable . | 2,035 |
| Aliens . . . . | 878 |
| Total N . . . | 6,814 |

TABLE 6.1--Continued

| Selected Characteristics | | Median Academic Expenses | Median Tuition and Fees | N | With Stipends Covering Less than 90 Per Cent of Academic Expenses | N | NA |
|---|---|---|---|---|---|---|---|
| g) Life Cycle | | | | | | | 131 |
| Men | Bachelor . | $500 | $400 | 1,758 | 10 | 1,301 | |
| | Husband . | 500 | 300 | 1,016 | 10 | 726 | |
| | Father . | 300 | 200 | 2,030 | 16 | 1,220 | |
| Women | Single . | 400 | 300 | 573 | 14 | 375 | |
| | Wife . . | 400 | 300 | 159 | 12 | 98 | |
| | Mother . | 200 | 200 | 242 | 20 | 117 | |

| | | | |
|---|---|---|---|
| N . . . . . . . . | 5,778 | N . . . . . . . . . | 3,837 |
| NA . . . . . . . | 131 | NA, inapplicable | 2,099 |
| Aliens . . . . | 878 | Aliens . . . . . | 878 |
| Total N . . . | 6,814 | Total N . . . . | 6,814 |

increase occurring between Stage II and Stage III. Over 95 per cent of the stipend holders in Stage IV indicated thall their academic expenses were covered by stipends compared to 83 per cent of the stipend holders in Stage I who so reported.

School Quality and Type of Institutional Control

Within each composite field, academic expenses and the proportion of academic expenses covered by stipends varied directly with institutional quality: students in Group I schools reported the greatest academic expenses and were most likely to have stipends covering these costs.

To interpret this we must consider several factors discussed in Chapters 4 and 5. Patterns of enrollment, stipend holding, and nonstipend employment as well as the median values of stipends and employment income varied by quality of school. Students in Group I schools were more likely to be enrolled full time, to hold stipends of greater value and were less likely to be employed than students in Group III schools. All these factors contribute to the differences shown in Table 6.1e.

In Group III schools one was most likely to find employed students who did not hold stipends and who were enrolled part time. In the high quality schools the typical student was a stipend holder who was not employed and who attended school as a full-time graduate student. Thus students in Group III schools were not committing as much time to study, and this was reflected in their lower academic expenses. For students in high quality schools, Academia was the most important aspect of their life; they were committed to graduate training and were devoting the majority of their time to it, and this is reflected in their higher academic expenses. This interpretation is also supported by the proportion of academic costs covered by stipends. Thus if students attended part time they paid their own academic costs; if students attend full time, academic costs were subsidized.

While field of study made little difference in total academic expenses, significant differences were found by field in the degree to which stipends covered total academic expenses. However, school quality had a persistant effect within each field of study and its relationship to the extent of coverage provided by stipends appeared to be greater than the students' composite field of study. The higher the school quality the greater the proportion of academic expenses covered by stipends (among those holding them). In high quality schools 98 per cent of the students in the physical sciences and 90 per cent of the students in engineering held stipends covering at least 90 per cent of all academic expenses; in Group III schools, 84 per cent of the physical science students and 72 per cent of those in engineering had comparable circumstances. Within each level of school quality, students in the physical, life, and behavioral sciences were most likely to hold stipends covering at least 90 per cent of their academic expenses. Also, within each field, students attending public schools had considerably lower academic expenses and had a larger proportion of their academic expenses covered by their stipends than students in private schools (Table 6.1e).

Academic costs varied considerably: Students holding fellowships or those enrolled in school on a full time basis were most likely to have larger academic expenses. Stipend coverage of at least 90 per cent of academic expenses occurred more frequently among those with advanced standing (working on doctoral thesis): among students in the physical, life, and behavioral sciences fields; and among those in a top quality school.

Thus far we have considered certain academic correlates of the pattern of academic expenses. While there were only slight differences in the dollar amounts required to meet academic expenses, there was considerable variation in the proportion of these expenses covered by stipend income. We shall now examine academic expenses in relation to certain nonacademic characteristics of graduate students.

## Nonacademic Correlates of Academic Expenses

### Employment Status

Employment as we have shown in Chapter 5, was a very important source of income for graduate students. It was also strongly related to the level of academic expenses: the proportion of these expenses covered by stipend income decreased as full-time employment increased. Median academic expenses of students with regular full-time employment were 60 per cent less than those of the unemployed students. Even so, well under one-half of these students who were working and who held stipends had nearly all their academic costs covered by this source, compared with 94 per cent of the unemployed students. The unemployed constituted the one group of students that did not report a difference between their total academic expenses and their tuition and fees. Students with regular full-time employment were least likely to spend money on academic purposes and were least likely to receive support for this purpose (see Table 6.1f).

### Life Cycle

The other important area of nonacademic behavior related to the economics of graduate study was the student's position in the life cycle. Unmarried students were able to spend more on educational purposes and were able to live on less by "economizing" in ways that were not possible for married students. On the other hand, childless couples could have two incomes to live on and thus could afford the expenses involved in gaining an advanced degree without undue deprivation. Students supporting a family experienced considerable economic strain in their pursuit of advanced academic training.

Although the association was not as linear as we might expect, there was a tendency for the amount of academic expenses to decline with an increase in family responsibility for both men and women. The sharpest differences appeared when married students who did not have children were compared with those who did. The latter spent approximately half as much money on academic expenses; among those holding stipends, proportionately more failed to receive all their academic support from stipend sources. There were also differences between the sexes in each family role: men spent more on education and were more likely to hold stipends covering at least 90 per cent of their academic costs than were women. And among women, only mothers reported no difference between total academic costs and tuition and fees.

## Nonacademic (Living) Expenses

There are several ways of analyzing student expenses. We would expect that the more income a student has the more he is going to spend on making himself or his family comfortable. Comfort may involve living in a better home, buying more or better food and clothes, or perhaps the purchase of a car for more convenient travel. Here we consider how students allocated their funds among the various types of living expenses.

Graduate students are similar to other adults in that almost all their income is spent on living expenses. The median figure for all living expenses was $4,200. The largest amount was for rent and food ($2,600), followed by transportation costs ($300), and health-related expenses ($200). Not all students reported expenditures for medical care: 17 per cent reported no health-related expenses between July, 1962, and June, 1963 (see Table 6.2).

## Field of Study

In the previous chapter it was shown total income differed by field of study. Engineering students reported considerably higher incomes than students in other fields of study, while the latter reported

TABLE 6.2

NONACADEMIC EXPENSES BY SELECTED ACADEMIC AND NONACADEMIC CHARACTERISTICS

| Selected Characteristics | Total Median Nonacademic Expenses | Major Nonacademic Expenses[a] | Transportation: Any (Per Cent) | Transportation: Median Amount | Health: Any (Per Cent) | Health: Median Amount | N |
|---|---|---|---|---|---|---|---|
| a) Field of Study | | | | | | | |
| Physical science . | $3,800 | $2,400 | 93 | $300 | 82 | $200 | 1,617 |
| Engineering . . . | 5,800 | 3,500 | 93 | 500 | 86 | 200 | 1,328 |
| Life science . . . | 3,500 | 2,400 | 94 | 300 | 84 | 200 | 1,004 |
| Behavioral science | 3,900 | 2,500 | 91 | 300 | 86 | 200 | 1,055 |
| Humanities . . . . | 3,700 | 2,400 | 89 | 300 | 78 | 200 | 932 |
| Total, five fields . . . . | 4,200 | 2,600 | 92 | 300 | 83 | 200 | 5,936 |

N . . . . . . . . . . . . 5,936
Aliens . . . . . . . . . . 878
Total N . . . . . . . . 6,814

| Selected Characteristics | Total Median Nonacademic Expenses | Major Nonacademic Expenses[a] | Transportation: Any (Per Cent) | Transportation: Median Amount | Health: Any (Per Cent) | Health: Median Amount | N |
|---|---|---|---|---|---|---|---|
| b) Stipend Holding | | | | | | | |
| None . . . . . . . | 5,400 | 3,200 | 92 | 400 | 82 | 200 | 1,988 |
| Stipend holding: Duty free . . | 4,400 | 2,800 | 93 | 400 | 83 | 200 | 1,760 |
| Stipend holding: Duties required | 3,200 | 2,100 | 93 | 300 | 83 | 100 | 2,101 |

N . . . . . . . . . . . . 5,849
NA . . . . . . . . . . . . 87
Aliens . . . . . . . . . . 878
Total N . . . . . . . . 6,814

| Selected Characteristics | Total Median Nonacademic Expenses | Major Nonacademic Expenses[a] | Transportation: Any (Per Cent) | Transportation: Median Amount | Health: Any (Per Cent) | Health: Median Amount | N |
|---|---|---|---|---|---|---|---|
| c) Enrollment Status | | | | | | | |
| Full time . . . | 3,200 | 2,200 | 92 | 300 | 79 | 100 | 3,279 |
| Part time . . . | 5,600 | 3,300 | 93 | 400 | 87 | 200 | 2,470 |

N . . . . . . . . . . . . 5,749
NA . . . . . . . . . . . . 187
Aliens . . . . . . . . . . 878
Total N . . . . . . . . 6,814

(Table 6.2--Continued)

[a]These are housing, food, beverages, personal maintenance, utility bills, etc.

TABLE 6.2--Continued

| Selected Characteristics | | Total Median Nonacademic Expenses | Major Nonacademic Expenses[a] | Transportation | | Health | | N |
|---|---|---|---|---|---|---|---|---|
| | | | | Any (Per Cent) | Median Amount | Any (Per Cent) | Median Amount | |
| d) Stage of Study | | | | | | | | |
| I . . . . | | $3,600 | $2,200 | 92 | $300 | 80 | $200 | 2,246 |
| II . . . . | | 4,300 | 2,600 | 93 | 400 | 83 | 200 | 1,226 |
| III . . . . | | 4,300 | 2,800 | 93 | 300 | 86 | 200 | 709 |
| IV . . . . | | 4,300 | 2,800 | 94 | 400 | 88 | 200 | 1,132 |
| | | N . . . . . . . . . . . . . . 5,313 | | | | | | |
| | | NA . . . . . . . . . . . . . . 623 | | | | | | |
| | | Aliens . . . . . . . . . . . . 878 | | | | | | |
| | | Total N . . . . . . . . . 6,814 | | | | | | |
| e) Employment Status | | | | | | | | |
| Unemployed . . . . | | 3,400 | 2,300 | 91 | 300 | 81 | 200 | 2,370 |
| Employed full time for . | 1-3 months | 3,200 | 2,000 | 93 | 300 | 80 | 100 | 1,719 |
| | 4-9 months | 4,500 | 2,800 | 91 | 400 | 83 | 200 | 394 |
| | 10-12 months. . | 6,700 | 4,000 | 94 | 500 | 89 | 300 | 1,453 |
| | | N . . . . . . . . . . . . . . 5,936 | | | | | | |
| | | Aliens . . . . . . . . . . . 878 | | | | | | |
| | | Total N . . . . . . . . . 6,814 | | | | | | |
| f) Life Cycle | | | | | | | | |
| Men | Bachelor | 2,200 | 1,500 | 90 | 300 | 67 | 100 | 1,758 |
| | Husband | 5,000 | 3,000 | 95 | 400 | 89 | 200 | 1,016 |
| | Father | 5,800 | 3,700 | 94 | 400 | 94 | 300 | 2,030 |
| Women | Single | 2,200 | 1,500 | 89 | 200 | 78 | 100 | 573 |
| | Wife | 5,400 | 3,200 | 91 | 300 | 89 | 200 | 159 |
| | Mother | 5,000 | 4,500 | 92 | 500 | 90 | 400 | 242 |
| | | N . . . . . . . . . . . . . . 5,778 | | | | | | |
| | | NA . . . . . . . . . . . . . . 131 | | | | | | |
| | | Aliens . . . . . . . . . . . 878 | | | | | | |
| | | Total N . . . . . . . . . 6,814 | | | | | | |

[a]These are housing, food, beverages, personal maintenance, utility bills, etc.

quite similar incomes. These facts are reflected in the data on living expenses.[2] Engineers reported spending substantially more on living, on food and rent, and on transportation than did students in the other fields of study, while the students in the remaining four fields did not differ in these costs. There were no significant differences by field of study in the proportions of students reporting medical expenses or in the amount of money spent on health care.

Academic Characteristics

In general, the pattern of total income was directly reflected in the amounts of money students allocated to living expenses. This is particularly true in the area of general living costs, such as rent and food. Stduents not holding stipends and those holding scholarships spent more on living expenses than did students holding fellowships or assistantships. Similarly, students enrolled part time earned and spent more than students enrolled full time. And, as we might expect, there were few differences in expenses between students at different stages of study.

Nonacademic expenses also were related to several academic characteristics of students. The largest differences occurred between holders of different types of stipends and between full- and part-time students. Both the total amounts of money spent on living and the proportion spent on the necessities of food and rent varied according to these two academic characteristics.[3] The more income students had the more likely they were to have greater living expenses, and the more likely they were to spend proportionately less of this total on "necessities."

Nonacademic Characteristics

Much the same picture emerges if we consider the employment status of these students. Living costs steadily rose as the number of months of

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[2]The spread in living expenses between engineers and other students makes sense given the high proportion of engineers studying part time and engaged in full-time employment.

[3]That is, part-time students and students without stipends showed higher levels of expenditure than full-time students and stipend recipients.

full-time nonstipend employment increased, although students working only one to three months were very much like unemployed students. Unemployed students spent $3,400 on living, compared to $6,700 spent by students who worked full time ten to twelve months.

Similarly, the differences between median living expenses and those specifically for rent and food increased as the number of months of employment increased. There was a $1,100 difference between total and basic living expenses among unemployed students, a $1,200 difference among students who worked only one to three months, and a $2,700 difference between these two among students employed ten to twelve months.

The other nonacademic characteristic importantly related to the economics of graduate school was family role. The differences in living expenses and in the proportion of expenses devoted to the necessities of living were most highly accentuated here. Students who had children spent a great deal more on overall living expenses, but as compared with childless married students, the proportion for rent and food was smaller. This was also true when the married were compared with single students. The further along students were in family formation, the greater the proportion of students spending money on medical care and the more likely they were to spend larger proportions of income on health. Only 67 per cent of the single men, for example, reported health and medical care expenses with a total cash output of only $100. On the other hand, 94 per cent of the fathers spent money on health care, the median cost being $300. Although the percentages were different, the same pattern held for women.

## Loans: Educational and Noneducational

Students were asked to list the sources and amounts of loans made between July, 1962, and June, 1963. Three types of loans were detailed: money from the National Defense Education Act (NDEA), other educational loans (deferred tuition, cash borrowed from the university, and all other), and noneducational loans such as installment debts, mortgages, etc. The sum of these gives the total value of all loans granted a student.

One-fifth of the students borrowed money during the period under study. The median cash value of all loans was $1,000. Although some students borrowed from more than one source, the majority borrowed from only one source (Table 6.3).

Loans were primarily nonacademic: 14 per cent borrowed a median sum of $1,000 for nonacademic purposes, compared to only 3 per cent who borrowed from NDEA and 5 per cent who borrowed from other educational agencies. Also, the median value of the loans from these sources was about one-half the amount borrowed from noneducational sources and for noneducational purposes.

Controlling for composite field of study yielded some variation in sources and amounts of loans. Engineering students borrowed more money than students in other fields and they were also more likely to borrow for noneducational purposes: 17 per cent borrowed $1,400 for noneducational uses. Educational loans were obtained more often by students in the behavioral sciences and the humanities (11 and 10 per cent, respectively) and for slightly higher median cash values. Engineering students, too, were the least likely (5 per cent) to borrow money for educational purposes.

Thus the higher the proportion of students in these fields of study borrowing from a given source, the more likely they were to borrow larger sums of money as well. There also appeared to be a slight but consistant relationship between all loans and loans for educational purposes. But cash values appeared to be inversely related: the larger the total loans were, the less likely they were to be for educational purposes.

Enrollment Status

Sources and amounts of money borrowed depended on enrollment status: Although full-time students were slightly more likely to borrow (22 compared to 19 per cent), they borrowed less money than part-time students ($800 compared to $1,100). Furthermore, they were considerably more likely to borrow money for educational purposes than students enrolled in school on a part time basis.

TABLE 6.3

FIELD OF STUDY, ENROLLMENT STATUS, AND LOANS INCURRED

(Per Cent of Stduents Reporting Any Loans Incurred and the Median Dollar Value of These Loans)

| Field and Study | Total Loans | | NDEA[a] Loans | | Other Education Loans | | Noneducation Loans | | N |
|---|---|---|---|---|---|---|---|---|---|
| | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | |
| a) Field of Study | | | | | | | | | |
| Physical science . . . | 18 | $ 800 | 3 | $500 | 5 | $ 400 | 13 | $1,000 | 1,617 |
| Engineering . . | 21 | 1,200 | 1 | 300 | 4 | 1,000 | 17 | 1,400 | 1,328 |
| Life science. . | 19 | 800 | 3 | 400 | 5 | 600 | 14 | 1,000 | 1,004 |
| Behavioral science . . . | 24 | 1,000 | 4 | 700 | 7 | 500 | 12 | 1,600 | 1,055 |
| Humanities. . . | 20 | 800 | 5 | 600 | 5 | 400 | 12 | 1,000 | 932 |
| Total, five fields. . . | 20 | 1,000 | 3 | 400 | 5 | 500 | 14 | 1,000 | 5,936 |

N . . . . . . . . . . 5,936
Aliens . . . . . . . . 878
Total N . . . . . . 6,814

| Field and Study | Total Loans Any (Per Cent) | Total Loans Median Value | NDEA Any (Per Cent) | NDEA Median Value | Other Education Any (Per Cent) | Other Education Median Value | Noneducation Any (Per Cent) | Noneducation Median Value | N |
|---|---|---|---|---|---|---|---|---|---|
| b) Enrollment Status | | | | | | | | | |
| Full time . . . | 22 | 800 | 4 | 600 | 7 | 500 | 13 | 800 | 3,279 |
| Part time . . . | 19 | 1,100 | 2 | 400 | 3 | 400 | 16 | 1,400 | 2,470 |

N . . . . . . . . . . . . . . 5,749
NA . . . . . . . . . . . . . 187
Aliens . . . . . . . . . . . 878
Total N . . . . . . . . . 6,814

[a]National Defense Education Act.

Both enrollment status and composite field of study were associated with sources and amounts of loans. Taking both into account, the most important variable was enrollment status, although there was some difference by field of study. Within each field the median cash value of loans to part-time students was larger than that of loans made to full-time students. Full-time students were more likely to borrow from educational sources than part-time students within each field of study. Also, proportionately more full-time students in the humanities and the behavioral sciences borrowed from educational sources than did students in the other fields of study (16 and 13 per cent compared to 10 per cent for students in the remaining fields). The range in total dollar amounts and in the proportions of students borrowing varied considerably among full-time students. Eighteen per cent of the full-time students in the physical sciences borrowed a median sum of $500. In contrast, 26 per cent of the full-time engineering students borrowed a median sum of $1,000 (Table 6.4).

## Other Academic Correlates

Another academic variable that could affect the incidence of loans is the presence of a stipend and the type of first stipend held. But Table 6.5a indicates this was not the case. There were few differences found between students who did and did not hold stipends: The proportions of students obtaining loans were similar as were amounts borrowed. There was a slight tendency for more stipend holders to have taken educational loans and for those without stipends to have higher dollar values for their educational loans, but these differences were small.

Type of loans taken by students was also related to stage of study: students availed themselves of educational loans in the later stages of study, especially in Stage IV, when they were working on their doctoral dissertations. A greater proportion of these students borrowed more money from educational sources than did students in the earlier stages of study (Table 6.5b).

## Employment and Family Role

Throughout this report employment status and position in the life cycle were shown to influence academic behavior. Of course, employment was a primary source of income for many students. Table 6.5c shows the

TABLE 6.4

ENROLLMENT STATUS AND LOANS INCURRED, CONTROLLING FOR FIELD OF STUDY

(Per Cent of Students Reporting Any Loans Incurred the Median Dollar Value of These Loans)

| Enrollment Status | Field of Study | Loans: Total Loans: Any (Per Cent) | Total Loans: Median | NDEA Loans: Any (Per Cent) | NDEA Loans: Median | Other Education Loans: Any (Per Cent) | Other Education Loans: Median | Noneducation Loans: Any (Per Cent) | Noneducation Loans: Median | N |
|---|---|---|---|---|---|---|---|---|---|---|
| Full time | Physical science . | 18 | $ 500 | 4 | $500 | 6 | $ 400 | 11 | $ 500 | 955 |
| | Engineering. | 26 | 1,000 | 1 | 500 | 9 | 1,000 | 17 | 1,000 | 515 |
| | Life science | 19 | 700 | 4 | 500 | 5 | 700 | 14 | 900 | 695 |
| | Behavioral science . | 25 | 800 | 5 | 700 | 8 | 500 | 15 | 1,000 | 661 |
| | Humanities . | 22 | 700 | 7 | 600 | 9 | 400 | 11 | 600 | 448 |
| Part time | Physical science . | 19 | 1,000 | 2 | 600 | 3 | 400 | 15 | 1,500 | 606 |
| | Engineering | 18 | 1,700 | 1 | 300 | 2 | 500 | 17 | 1,800 | 771 |
| | Life science | 19 | 1,000 | 2 | 300 | 4 | 100 | 16 | 1,000 | 277 |
| | Behavioral science . | 22 | 1,100 | 2 | 600 | 4 | 400 | 18 | 1,300 | 376 |
| | Humanities . | 18 | 1,000 | 2 | 300 | 3 | 500 | 15 | 1,000 | 440 |

N . . . . . . . . . . . . 5,744
NA . . . . . . . . . . . . 192
Aliens . . . . . . . . . . 878

Total N . . . . . . . 6,814

TABLE 6.5

SELECTED ACADEMIC AND NONACADEMIC CHARACTERISTICS AND LOANS INCURRED

(Per Cent Reporting Any Loans and the Median Dollar Value of the Loans)

| Selected Characteristics | Loans: Total Loans: Any (Per Cent) | Median Value | NDEA Loans: Any (Per Cent) | Median Value | Other Education Loans: Any (Per Cent) | Median Value | Noneducation Loans: Any (Per Cent) | Median Value | N |
|---|---|---|---|---|---|---|---|---|---|
| a) Stipend Holding | | | | | | | | | |
| None | 20 | $1,000 | 3 | $700 | 4 | $500 | 15 | $1,200 | 1,988 |
| Duty free | 19 | 1,000 | 2 | 500 | 5 | 600 | 14 | 1,000 | 1,760 |
| Assistantship | 22 | 800 | 4 | 500 | 6 | 400 | 15 | 900 | 2,101 |

N . . . . . . . . . . 5,849
NA . . . . . . . . . . 87
Aliens . . . . . . . . 878
Total N . . . . . . 6,814

| Selected Characteristics | Total Loans: Any (Per Cent) | Median Value | NDEA Loans: Any (Per Cent) | Median Value | Other Education Loans: Any (Per Cent) | Median Value | Noneducation Loans: Any (Per Cent) | Median Value | N |
|---|---|---|---|---|---|---|---|---|---|
| b) Stage of Study | | | | | | | | | |
| (Master's) Beginning I | 20 | 1,000 | 4 | 500 | 4 | 400 | 14 | 1,000 | 2,246 |
| (Master's) Beginning II | 21 | 900 | 3 | 600 | 5 | 500 | 16 | 1,100 | 1,226 |
| (Doctorate) Advanced III | 20 | 900 | 2 | 700 | 5 | 500 | 14 | 1,000 | 709 |
| (Doctorate) Advanced IV | 22 | 900 | 3 | 500 | 8 | 600 | 15 | 1,000 | 1,132 |

N . . . . . . . . . . 5,313
NA . . . . . . . . . . 623
Aliens . . . . . . . . 878
Total N . . . . . . 6,814

| Selected Characteristics | Total Loans: Any (Per Cent) | Median Value | NDEA Loans: Any (Per Cent) | Median Value | Other Education Loans: Any (Per Cent) | Median Value | Noneducation Loans: Any (Per Cent) | Median Value | N |
|---|---|---|---|---|---|---|---|---|---|
| c) Employment | | | | | | | | | |
| Unemployed | 17 | 900 | 3 | 500 | 5 | 500 | 12 | 1,000 | 2,370 |
| Employed full time 1-3 months | 24 | 700 | 4 | 600 | 8 | 500 | 15 | 800 | 1,719 |
| Employed full time 4-9 months | 23 | 1,000 | 4 | 700 | 8 | 600 | 15 | 1,000 | 394 |
| Employed full time 10-12 months | 20 | 1,200 | 1 | 300 | 2 | 300 | 18 | 1,500 | 1,453 |

N . . . . . . . . . . 5,936
Aliens . . . . . . . . 878
Total N . . . . . . 6,814

(Table 6.5--Continued)

TABLE 6.5--Continued

| Selected Characteristics | | Loans | | | | | | | | N |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total Loans | | NDEA Loans | | Other Education Loans | | Noneducation Loans | | |
| | | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | Any (Per Cent) | Median Value | |
| d) Family Role | | | | | | | | | | |
| | Bachelor. | 16 | $ 700 | 3 | $500 | 6 | $400 | 10 | $1,000 | 1,758 |
| Men | Husband . | 22 | 1,000 | 2 | 500 | 5 | 400 | 17 | 1,200 | 1,016 |
| | Father. . . | 26 | 1,000 | 4 | 600 | 6 | 600 | 19 | 1,000 | 2,030 |
| | Single. . | 11 | 500 | 2 | 400 | 3 | 300 | 7 | 500 | 573 |
| Women | Wife. . . | 19 | 1,300 | 3 | 700 | 4 | 500 | 15 | 1,400 | 159 |
| | Mother. . | 19 | 1,300 | 2 | 400 | 2 | 600 | 15 | 1,500 | 242 |

| | |
|---|---|
| N . . . . . . . . . . . . | 5,778 |
| NA . . . . . . . . . . . . | 131 |
| Aliens . . . . . . . . . . | 878 |
| Total N . . . . . . . . | 6,814 |

relationship between employment status and loans.

Students who did not work full time during any part of the year or had no employment were no different from students who held full-time jobs for ten to twelve months of the year: Neither of these groups borrowed much for educational purposes, nor were they as likely to borrow as was the student who was either sporadically or occasionally employed full time. Twelve per cent of the latter students borrowed between $500 and $700 from educational agencies for educational purposes, compared with 8 per cent of the unemployed and 3 per cent of the students employed full time, who borrowed from $300 to $500 from these sources. Thus students who worked some (but not all) the time in full-time jobs were those most likely to borrow for educational purposes. Unemployed students relied on stipends, spouse's employment earnings, or independent means and therefore did not borrow as heavily as the periodically employed students. On the other hand, the students who held full-time regular jobs the year round earned enough to pay for educational costs or attended school only part time.

Family role was also important for understanding who borrowed how much and for what purposes. Table 6.5d indicates that although proportionately more men in each life cycle stage borrowed money (with one exception), women were more likely to borrow greater amounts. Among men the fathers were most likely to take loans, and they were most likely to borrow for educational purposes. Among women, the pattern was slightly different and in line with what we might expect from previous findings. Married but childless women were those most likely to borrow money to attend school. They also borrowed the most money from educational sources. On the other hand, mothers were the least likely of all students to borrow money for educational purposes. This seems quite reasonable since it was previously shown that they had substantial family incomes attributed to their husbands.

## Summary

Expenses incurred by graduate students in five composite fields of study were described in this chapter. The median of expenses incurred by these students for nonacademic purposes amounted to $4,200: the major category "living expenses," such as housing, food, personal maintenance, and the like--$2,600 during the twelve-month period under study; transportation expenses were $300, and expenditures for health and medical care were $200. Academic expenses among students in these five fields of study totaled some $400; in particular tuition and fees came to $300. Full-time students spent $600 for academic purposes; part-time students, $300. The proportion of these expenses covered by a stipend varied by field of study. Academic expenses were highest among students attending high quality schools.

One out of five students secured a loan during the year; the median value of these loans was $1,000, and they came primarily from noneducational sources.

## CHAPTER 7

## THE DELAYED DOCTORATE

Correlates and consequences of delay in securing the doctorate on the basis of full-time uninterrupted study is the topic of this chapter. From a manpower perspective any delay in completing a program leading to the doctorate results in fewer workers with academic credentials in great demand. Hence it is useful to examine those factors that deflect students from full-time study and from completion of their program of study.

Assumptions are laid out concerning the measurement of delay and those aspects of delay that inhibit academic progress. Then attention is given to social and academic factors associated with rapid completion of degree requirements, whether different patterns of stipend support are associated with distinctive modes of delay, and the like.

The preferred design for a study of factors that contribute to delay in attaining the doctorate would be one that traces the academic and occupational careers of a cohort of college graduates over a sufficient period of time to permit all of them to have attained their ultimate academic level of attainment. An alternative had to be considered because this study was cross-sectional in design.[1]

Another limitation that must be taken into account is this: the number of calendar years a student is in graduate school has a direct bearing on the kinds of delay he experiences. Students who have just

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[1] "To assess these effects properly would involve following our sample of graduate students over a period of time until they had either achieved the degrees for which they were working or had definitely abandoned these aims. Graduate study being so loosely organized, . . . such a follow-up study might take more than a decade to reach the point where every one of our respondents had reached his academic destination or abandoned this career line " (Davis, 1962, p. 106).

entered graduate school have not had an opportunity to change their enrollment status (from full time to part time or vice versa) or to interrupt their graduate study. Therefore the analysis presented in this chapter always takes into consideration the number of calendar years of graduate study.

The alternative employed here involves a comparison of the modes of delayed behavior reported by students at various stages of study. Of course, a cross-sectional study permits no inferences about changes among students at various stages of study: information is lacking about those who dropped out of graduate school during the 1963 spring term before reaching a given stage of study. But it is possible to examine those factors associated with delayed study among students at each stage of study.

The analysis in this chapter is restricted to those students who expect to receive the doctorate. Differences in requirements and in investments among those who expected the master's degree and those who expected the doctorate are many. Seventy-seven per cent of all students in the sample seek the doctorate; clearly this is the more important segment, numerically and occupationally.[2]

## Assumptions Concerning the Delayed Doctorate

Delay may be measured in a number of ways: First, a student may defer the initiation of graduate study after receipt of the baccalaureate. Table 1.4 shows that 38 per cent of the sample was delayed one full year or more by virtue of this form of delay. Second, a student may be delayed by enrolling for a program of graduate studies on a part-time basis. Third, a student could delay completion of the program by dropping out of graduate school for a period of time.

[2]Students expecting the terminal master's degree are not considered in this chapter.

On the basis of questionnaire items asking about hiatus,[3] past years of graduate study,[4] and current enrollment status,[5] four measures of delay were established: (1) postponement of graduate study after receipt of bachelor's degree; (2) first year of graduate study was part time; (3) enrolled for part-time study at some point other than the first year; (4) temporary suspension of graduate studies.

Note that the last two types of delay do not apply to students in their first year of graduate study.

Table 7.1 indicates that the majority of graduate students were not delayed on three of the four items shown. Only 10 per cent of the students enrolled more than one year had ever interrupted their studies temporarily, 31 per cent began their graduate studies as part-time students, and 28 per cent delayed a year or more in beginning their studies. But 51 per cent of those students enrolled for more than a year had not always been full-time students. Furthermore, a graduate student can be delayed in more than one of these ways, and it is necessary to determine whether being delayed in one way affects other modes of delay. This information is shown in Table 7.2.

Table 7.2 shows a positive relationship between these measures of delay; as a result, a student delayed in one way is likely to be delayed in other ways as well. For example, if a first-year student entered graduate school without delay after receiving his bachelor's degree, there was a probability of 24 per cent greater than chance that he also enrolled full time his first year in graduate school.

Table 7.2 shows that among students enrolled for more than one year the relationships between lack of delay in entering graduate schools and most other measures were quite strong. The relationships between ever interrupting studies and the other delay measures, however, were not remarkable.

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[3]Item 9: "How many calendar years elapsed between the time you received your bachelor's degree and the start of your graduate studies?"

[4]Item 10: "During which of the previous years were you enrolled for graduate study?" Note: because of multiple responses and an ambiguous time reference, the data on enrollment prior to June, 1958, were not used.

[5]The Enrollment Index was described in Chapter 3.

TABLE 7.1

FREQUENCY DISTRIBUTIONS OF THE FOUR MEASURES OF DELAY

a) Hiatus between receiving bachelor's degree and entrance into graduate school (all students eventually seeking the doctorate).

| | | Per Cent |
|---|---|---|
| Less than one year | | 72 |
| One year | | 8 |
| Two years | | 5 |
| Three years | | 4 |
| Four years or more | | 10 |
| N | 3,990 | |
| NA, inapplicable | 1,946 | |
| Total N | 5,936 | |

b) Type of enrollment during the first year in graduate school (all students seeking the doctorate).

| | | Per Cent |
|---|---|---|
| Full time | | 69 |
| Part time | | 31 |
| N | 4,015 | |
| NA, inapplicable | 1,921 | |
| Total N | 5,936 | |

c) Pattern of type of enrollment while in graduate school (all doctoral degree students who have completed more than one academic year of study).

| | | Per Cent |
|---|---|---|
| Full time: | | |
| Always | | 49 |
| Mainly | | 14 |
| Equally part time and full time | | 10 |
| Part time: | | |
| Always | | 17 |
| Mainly | | 11 |
| N | 4,015 | |
| NA, inapplicable | 1,921 | |
| Total N | 5,936 | |

d) Interruption of graduate studies (among the same students as in panel c).

| | | Per Cent |
|---|---|---|
| Not interrupted | | 90 |
| Interrupted | | 10 |
| N | 4,015 | |
| NA, inapplicable | 1,921 | |
| Total N | 5,936 | |

TABLE 7.2

RELATIONSHIPS BETWEEN DELAY ITEMS PRIOR TO AND DURING GRADUATE SCHOOL AMONG STUDENTS HAVING COMPLETED SPECIFIC AMOUNTS OF WORK IN SCHOOL (YULE'S "Q")

a)

Students who have completed less than one academic year of study

| Hiatus between B.A. and graduate school was . . . . . . . . | Initial enrollment was . . . . . . . | |
|---|---|---|
| | Full time | Part time |
| Less than one year | +.24[a] (1,555) | |
| One year or more | | |

b)

Students enrolled for more than one calendar year in graduate school and who have also completed more than one academic year of study

| First year in school was . . . . . . . . . | Enrollment pattern | | Hiatus | | Interrupted studies | |
|---|---|---|---|---|---|---|
| | Always full time | All other | None | Any | No | Yes |
| Full time | +1.0[b] (2,846)[c] | | +.51 (2,814) | | +.24 (2,846) | |
| Part time | | | | | | |
| Enrollment pattern was | | | | | | |
| Always full time | | | +.41 (2,814) | | +.25 (2,846) | |
| All other | | | | | | |
| Hiatus was . . . . . . | | | | | | |
| Less than one year | | | | | +.24 (2,814) | |
| One year or more | | | | | | |

N . . 4,001
NA . . 36
Inapp. 1,899
Aliens 878
Total N. . 6,814

[a]The number in this and the other cells is a measure of the degree of association between the two variables; it is called "Q" and was developed by Yule to measure the relationships between variables using aggregate data. It is interpreted as follows: the number in the cell is to read as the degree or amount to which knowledge of one specific variable allows or helps the analyst predict how a group of persons will behave or respond on another unit of information. It is a measure of the probability of any given person's behavior, insofar as he belongs to a group. For example, knowing a respondent's sex is very useful in predicting the probability or likelihood of a person bearing a baby or being pregnant.

[b]This "Q" must be 1.00, for if a student has always been enrolled full time he must have been a full-time student during his first year in school.

[c]The number of respondents answering both these indices or items.

(Table 7.2--Continued)

TABLE 7.2--Continued

PATTERNS OF DELAY BY CALENDAR YEARS IN GRADUATE SCHOOL

c)

Students Enrolled in their First Year of Graduate School

| Hiatus | Graduate Enrollment | Per Cent | N |
|---|---|---|---|
| No | Full time | 57 | 674 |
| No | Part time | 20 | 233 |
| Yes | Full time | 15 | 172 |
| Yes | Part time | 9 | 102 |

d)

Students Enrolled Two or More Calendar Years in Graduate School

| Hiatus | First Year of Graduate Enrollment | Pattern of Graduate Enrollment | Suspended Studies | Per Cent | N |
|---|---|---|---|---|---|
| No | Full time | Full time | None | 36 | 1,024 |
| No | Full time | Full time | Once or more | 3 | 74 |
| No | Full time | Part time | None | 14 | 391 |
| No | Full time | Part time | Once or more | 1 | 34 |
| No | Part time | Part time | None | 15 | 426 |
| No | Part time | Part time | Once or more | 2 | 58 |
| Yes | Full time | Full time | None | 9 | 256 |
| Yes | Full time | Full time | Once or more | 1 | 28 |
| Yes | Full time | Part time | None | 4 | 120 |
| Yes | Full time | Part time | Once or more | 1 | 25 |
| Yes | Part time | Part time | None | 13 | 365 |
| Yes | Part time | Part time | Once or more | 2 | 55 |

| | |
|---|---|
| N . . . . . . . . . . | 4,037 |
| Inapplicable . . . | 1,899 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . . | 6,814 |

Patterns of Delay

These measures of delay may be fruitfully combined into two categories: delay prior to graduate study and delay during graduate study. Table 7.3 shows the proportions of students, by year in graduate school, in terms of the pattern of delay experienced.

TABLE 7.3

PATTERN OF DELAY AND NUMBER OF CALENDAR YEARS ENROLLED IN GRADUATE SCHOOL

| Calendar Years Completed | Delayed | | | |
|---|---|---|---|---|
| | Prior | During | Per Cent | N |
| One year . . . . . . . | No | No | 57 | 674 |
| | Yes | No | 15 | 172 |
| | No | Yes | 20 | 233 |
| | Yes | Yes | 9 | 102 |
| Two or three years . . | No | No | 42 | 694 |
| | Yes | No | 9 | 154 |
| | No | Yes | 32 | 539 |
| | Yes | Yes | 16 | 273 |
| Four years or more . . | No | No | 28 | 330 |
| | Yes | No | 9 | 102 |
| | No | Yes | 37 | 444 |
| | Yes | Yes | 27 | 320 |

| | |
|---|---|
| N . . . . . . . . . . | 4,037 |
| Inapplicable . . . | 1,899 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . | 6,814 |

Students at each point in their graduate school career experienced different patterns of delay. The majority of first-year students (57 per cent) experienced no delay at all, and less than one out of ten first-year students (9 per cent) were delayed both prior to entrance and while in graduate school. Delay after entry was slightly more common than delay prior to entrance among these students (29 per cent compared to 24 per cent).

Second- and third-year students had different delay patterns. Less than a majority (42 per cent) reported no delay and almost two out of ten (16 per cent) were delayed both prior to and during graduate study. These students also were much more likely to be delayed during graduate school (48 per cent) rather than prior to initial graduate study (24 per cent).

Less than one-third of the most advanced students experienced no delay at all, and almost as many were delayed prior to and after entry into graduate school. Almost twice as many students in this stage experienced delays during graduate school (64 per cent) than were delayed prior to graduate school (36 per cent).[6]

## Delay and Field of Study

Among first-year students, more than a majority of those in the physical, life, and behavioral sciences were not delayed, while more than a majority of the students in engineering and humanities were delayed. Students in the physical sciences were least likely to report delay prior to entry into graduate school. Approximately 25 per cent of the physical, life, and behavioral science students were delayed during graduate school, compared to between 35 and 40 per cent of the engineering and humanities students.

Furthermore, students in the humanities and engineering fields were twice as likely to be delayed both prior to and during graduate school as students in the other fields.

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[6] Doctoral students enrolled four or more years in this spring, 1963, sample represent an unknown proportion of those who started; some may have completed their program of study, others probably dropped out temporarily or permanently. Also, students in advanced stages of study may be enrolled part time because many schools stipulate that a student receiving the advanced degree be enrolled at least on a part-time basis during the term in which the degree is to be awarded. Between 6 and 12 per cent of the students working for the doctorate expected this degree in 1963 (see Table 1.11).

TABLE 7.4

COMPOSITE FIELD OF STUDY, DELAY, AND CALENDAR YEARS COMPLETED

a) Per Cent Showing Each Type of Delay

| Calendar Years Completed | Delayed | | Field of Study | | | | |
|---|---|---|---|---|---|---|---|
| | Prior | During | Physical Science | Engin-eering | Life Science | Behavioral Science | Human-ities |
| Less than one year . . . . | No | No | 64 | 48 | 57 | 61 | 48 |
| | Yes | No | 11 | 13 | 20 | 14 | 17 |
| | No | Yes | 18 | 26 | 19 | 17 | 21 |
| | Yes | Yes | 7 | 13 | 4 | 7 | 14 |
| N . . . . | | | 331 | 188 | 188 | 269 | 205 |
| Two or three years . . . . | No | No | 50 | 32 | 44 | 45 | 32 |
| | Yes | No | 8 | 8 | 10 | 11 | 11 |
| | No | Yes | 29 | 42 | 30 | 33 | 30 |
| | Yes | Yes | 14 | 19 | 16 | 12 | 26 |
| N . . . . | | | 497 | 323 | 277 | 313 | 250 |
| Four years or more . . . . | No | No | 34 | 13 | 41 | 23 | 16 |
| | Yes | No | 8 | 2 | 13 | 9 | 10 |
| | No | Yes | 35 | 53 | 28 | 38 | 34 |
| | Yes | Yes | 22 | 33 | 17 | 31 | 40 |
| N . . . . | | | 368 | 196 | 239 | 251 | 142 |

b) Per Cent Showing Each Type of Delay (Repercentaged)

| Calendar Years Completed | Delay | Field of Study | | | | |
|---|---|---|---|---|---|---|
| | | Physical Science | Engin-eering | Life Science | Behavioral Science | Human-ities |
| Less than one year . . . . | None | 64 | 48 | 57 | 61 | 48 |
| | Prior | 18 | 26 | 24 | 21 | 31 |
| | During | 25 | 39 | 23 | 24 | 35 |
| Two or three years . . . . | None | 50 | 32 | 44 | 45 | 32 |
| | Prior | 22 | 27 | 26 | 23 | 37 |
| | During | 43 | 61 | 46 | 45 | 59 |
| Four years or more . . . . | None | 34 | 13 | 41 | 23 | 16 |
| | Prior | 30 | 35 | 30 | 40 | 50 |
| | During | 57 | 86 | 45 | 69 | 74 |

| | |
|---|---|
| N . . . . . . . . . | 4,037 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . | 878 |
| Total N . . . . | 6,814 |

Among second- and third-year students, between 44 and 50 per cent of the students in the physical, life, and behavioral sciences were not delayed at all, as compared with less than one-third of the students in humanities and engineering (32 per cent). Students in humanities were most likely to report being delayed both before entrance and during graduate school; students in the behavioral sciences, least likely.

Among students enrolled four or more years, a different pattern was evident. Forty-one per cent of the students in life science and 34 per cent of the students in physical science reported no delay, compared to only 23 per cent of the students in the behavioral science field, and between 13 and 16 per cent of the students in engineering and humanities. And, students in engineering, humanities, and behavioral science were more likely than those in physical or life science to experience both types of delay.

## Stipend Holding and Delay

Since the spring, 1963, enrollment status was highly correlated with stipend holding,[7] stipend holding should be highly correlated with the measures of delay employed here.

The relationship between stipend holding and delay was examined in two ways: First patterns of stipend holding were examined among students who had different delay experiences, and second, where possible, the effects on delay in graduate school were specified among students currently holding a stipend.

Table 7.5 shows that regardless of year in graduate school, undelayed students were by far the most likely to have held stipends; students who were delayed both prior to and during graduate school were by far the least likely to report holding stipends. Also, regardless of years in graduate school, students who were delayed before entering graduate school, but not since, were more likely to have held stipends in 1962-63 than those who reported delay during but not prior to graduate school.

---

[7]See Table 3.3.

Among students in their fourth year or more in graduate school, there was little difference in rate of stipend holding between those who were and were not delayed prior to graduate school (94 versus 91 per cent). This was not the case with students who were delayed during graduate school regardless of previous delay; students delayed at both times were less likely to hold stipends than the full-time, uninterrupted graduate students (51 versus 64 per cent).

Table 7.6 presents the same data given in Table 7.5, but calculated to show the history of delay comparing students according to stipend holding in 1962-63. At each level of academic progress, stipend holders had a remarkably different history of delay from that reported by those who did not have stipends.

Two-thirds (65 per cent) of first-year stipend holders never experienced delay, 20 per cent were delayed during graduate school, and only 3 per cent were delayed both prior to and during graduate school. Forty per cent of the first-year students without stipends were not delayed at all, but 46 per cent were delayed during school.

Among students who had been in graduate school longer, stipend holders were far more likely to report no delay at all and far less likely to have been delayed during school than those without stipends. Less than one-half of the stipend holders with two to three years of graduate schooling and slightly more than one-half of the most advanced stipend holders were delayed during school, compared to more than four-fifths of the two- to three-year students without stipends and almost all the most advanced students who did not have stipends.

Two explanations for the pattern in this and the preceding table come to mind. One is that holding a stipend reduced the probability that students would be delayed; and conversely, stipends were given to students who had not been delayed. To choose between these explanations would require longitudinal data from a panel study.

## Delay and Type of First Stipend

Having established a pattern between stipend holding and a history of delay, we ask next whether type of stipend held was also related to

TABLE 7.5

DELAY AND STIPEND HOLDING DURING 1962-63, CONTROLLING FOR NUMBER OF CALENDAR YEARS COMPLETED

| Delayed | | Per Cent Holding Stipends During 1962-63 | | |
|---|---|---|---|---|
| | | Calendar Years Completed in School | | |
| Prior | During | Less than one year | Two or three years | Four years or more |
| No | No | 80 (674) | 93 (694) | 94 (330) |
| Yes | No | 66 (171) | 84 (154) | 91 (102) |
| No | Yes | 62 (233) | 66 (539) | 64 (444) |
| Yes | Yes | 28 (102) | 52 (273) | 51 (320) |
| NA . . . | | (1) | (0) | (0) |

| | |
|---|---|
| N . . . . . . . . . | 4,036 |
| NA . . . . . . . . | 1 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

TABLE 7.6

TYPES OF DELAY AMONG STUDENTS, BY STIPEND HOLDING AND CALENDAR YEARS OF SCHOOL COMPLETED

(Per Cent)

| Delay | Calendar Years and Stipend Holding | | | | | |
|---|---|---|---|---|---|---|
| | Less than one year | | Two or three years | | Four years or more | |
| | Stipend | None | Stipend | None | Stipend | None |
| None . . . | 65 | 40 | 51 | 13 | 36 | 6 |
| Prior . . | 17 | 39 | 21 | 41 | 31 | 48 |
| During . . | 20 | 46 | 40 | 82 | 54 | 91 |
| N . . . | 829 | 351 | 1,273 | 387 | 850 | 346 |
| NA . . . | 1 | | | | | |

| | |
|---|---|
| N . . . . . . . . . | 4,036 |
| NA . . . . . . . . | 1 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

delay. Table 7.7 shows that students experiencing different types of delay also differed in the type of first stipend held in 1962-63.

TABLE 7.7

PATTERN OF DELAY AND TYPE OF FIRST STIPEND HELD, CONTROLLING FOR CALENDAR YEARS COMPLETED

(Per Cent Holding Each Type of Stipend among Stipend Holders)

| Delay | | Type of First Stipend | | | | | |
|---|---|---|---|---|---|---|---|
| Prior | During | Scholarship | Fellowship | Research Assistant | Teaching Assistant | N | NA, Inapplicable |
| | | First-Year Students | | | | | |
| No | No | 7 | 38 | 27 | 29 | 542 | 132 |
| Yes | No | 16 | 32 | 26 | 27 | 114 | 58 |
| No | Yes | 16 | 10 | 24 | 50 | 145 | 88 |
| Yes | Yes | 50 | 11 | 11 | 29 | 29 | 73 |
| | | Second to Third-Year Students | | | | | |
| No | No | 5 | 40 | 27 | 28 | 645 | 49 |
| Yes | No | 8 | 34 | 28 | 31 | 130 | 24 |
| No | Yes | 15 | 20 | 21 | 44 | 357 | 182 |
| Yes | Yes | 31 | 23 | 19 | 26 | 141 | 132 |
| | | Fourth to Fifth-Year Students | | | | | |
| No | No | 2 | 33 | 45 | 20 | 309 | 21 |
| Yes | No | 4 | 35 | 41 | 20 | 93 | 9 |
| No | Yes | 16 | 29 | 34 | 21 | 285 | 159 |
| Yes | Yes | 24 | 23 | 27 | 27 | 163 | 157 |

| | |
|---|---|
| N . . . . . . . . . | 2,953 |
| NA . . . . . . . . | 1,084 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

Undelayed first-year students most often held fellowships, followed by research assistantships (RA's) and teaching assistantships (TA's). Students delayed only prior to entrance held these three types of stipends more frequently than they did scholarships. Students delayed only during school most often held TA's, and those students delayed in both ways most often held scholarships. This pattern also obtained among second- and third-year graduate students.

However, this was not the case among students who were enrolled for four or more years. Students not delayed during school more often held RA's. This type of stipend was also most frequently held by students delayed only prior to graduate entrance, while students delayed in both ways were as likely to hold one as another type of stipend.

Table 7.8 shows the pattern of delay experienced by students holding different types of stipends in 1962-63. In viewing delay among various types of stipend holders, we were primarily interested in determining the association between delay during graduate school and types of stipends held, as this is the time when a stipend would be influencing delay. In general, fellowship holders were least likely to have been delayed while in school, followed by research assistants. The type of stipend most highly associated with delay during graduate training is a scholarship. Thus, among first-year students, 7 per cent of the fellows and 41 per cent of the scholars were delayed during school; among second- and third-year students, 26 per cent of the fellows and 70 per cent of the scholars were delayed during school; and, among those in school four or more years, 47 per cent and 91 per cent were so delayed.

While the interpretation of these findings is problematical, it makes more sense to think that holding a lucrative fellowship would enable a student to be undelayed. Among fourth-year students an RA might serve the same function, because these students generally work on research relevant to the thesis.

## Delay and the Effects of Stipend Holding

A history of delay in graduate studies was related to field of study, stipend holding, and types of stipends held. What the students themselves have to say about the effects of having or not having a stipend is shown in Table 7.9.

Responses to a question asking about the effects of stipend holding were classified as indicating a positive or a negative effect, and a subtotal for each of these classifications was thus derived (see Table 7.9).

Students least likely to report negative effects and most likely to report positive effects were those who never were delayed, while

TABLE 7.8

TYPE OF FIRST STIPEND HELD, PATTERN OF DELAY, AND NUMBER OF CALENDAR YEARS IN SCHOOL

(Per Cent Delayed)

| Type of First Stipend Held | Delay | | | | | | N |
|---|---|---|---|---|---|---|---|
| | None | Prior But Not During | During But Not Prior | Both | Prior (Total) | During (Total) | |
| | First-Year Students | | | | | | |
| Scholarship . | 40 | 20 | 25 | 16 | 36 | 41 | 91 |
| Fellowship . . | 79 | 14 | 6 | 1 | 15 | 7 | 257 |
| Research assistantship | 68 | 14 | 17 | 1 | 15 | 18 | 209 |
| Teaching assistantship | 58 | 12 | 27 | 3 | 15 | 30 | 263 |
| | Second to Third-Year Students | | | | | | |
| Scholarship . | 22 | 7 | 38 | 32 | 39 | 70 | 138 |
| Fellowship . . | 64 | 11 | 18 | 8 | 19 | 26 | 401 |
| Research assistantship | 56 | 11 | 24 | 9 | 20 | 33 | 309 |
| Teaching assistantship | 43 | 10 | 38 | 9 | 19 | 47 | 410 |
| | Fourth to Fifth-Year Students | | | | | | |
| Scholarship . | 7 | 4 | 50 | 41 | 45 | 91 | 91 |
| Fellowship . . | 41 | 12 | 33 | 14 | 26 | 47 | 249 |
| Research assistantship | 44 | 12 | 30 | 14 | 26 | 44 | 310 |
| Teaching assistantship | 35 | 10 | 33 | 24 | 34 | 57 | 181 |

| | |
|---|---|
| N . . . . . . . . . | 2,910 |
| NA . . . . . . . . | 1,127 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

TABLE 7.9

PERCEIVED EFFECTS OF STIPEND HOLDING DURING 1962-63, BY DELAY AND CALENDAR YEARS COMPLETED

(Per Cent Reporting an Effect among Stipend Holders)

| Delayed | | Effects of Holding a Stipend[a] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Prior to Graduate School | During Graduate School | Shifted Field or Thesis Topic | Attended Nonpre-ferred School | Enrolled Part Time | Stipend Duties Delayed Degree | Total Unde-sirable | Began Graduate Work Sooner | Did Pre-ferred Research | Chose this Univer-sity | Total Desir-able | None | N | NA, In-appli-cable |
| | | First-Year Students | | | | | | | | | | | |
| No | No | 9 | 14 | 6 | 5 | 34 | 34 | 13 | 25 | 72 | 34 | 542 | 142 |
| No | Yes | 6 | 23 | 31 | 14 | 74 | 37 | 4 | 15 | 56 | 30 | 141 | 92 |
| Yes | No | 9 | 11 | 13 | 5 | 38 | 32 | 10 | 15 | 57 | 41 | 111 | 61 |
| Yes | Yes | 8 | 11 | 18 | 14 | 51 | 14 | -- | 4 | 18 | 57 | 74 | 74 |
| | | Second to Third-Year Students | | | | | | | | | | | |
| No | No | 5 | 6 | 5 | 11 | 27 | 19 | 23 | 15 | 57 | 44 | 631 | 63 |
| No | Yes | 5 | 7 | 18 | 16 | 46 | 21 | 14 | 11 | 46 | 44 | 349 | 190 |
| Yes | No | 8 | 6 | 11 | 9 | 34 | 23 | 15 | 9 | 47 | 44 | 127 | 27 |
| Yes | Yes | 5 | 5 | 17 | 12 | 39 | 22 | 9 | 9 | 40 | 46 | 138 | 135 |
| | | Fourth to Fifth-Year Students | | | | | | | | | | | |
| No | No | 2 | 2 | 3 | 8 | 15 | 8 | 39 | 8 | 55 | 48 | 304 | 26 |
| No | Yes | 6 | 8 | 14 | 14 | 42 | 13 | 28 | 7 | 48 | 42 | 278 | 166 |
| Yes | No | 6 | 6 | 6 | 6 | 24 | 8 | 32 | 6 | 46 | 50 | 91 | 11 |
| Yes | Yes | 5 | 3 | 10 | 13 | 31 | 2 | 20 | 3 | 35 | 50 | 159 | 161 |

| | |
|---|---|
| N . . . . . . . . . | 2,945 |
| NA . . . . . . . . | 1,092 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

[a]Multiple responses were permitted.

students delayed both prior to and during graduate school were least likely to report positive effects from stipend holding. Those who were delayed at only one time were equally likely to report positive effects of stipend holding regardless of when the delay took place. The particular effects of stipend holding, however, depended on the number of years in graduate school. As years in graduate school increased, the chances increased that students would report that their stipends enabled them to do the research they really wanted.

Negative effects were reported most frequently by students delayed only during graduate school, followed by students delayed both prior to and during graduate school. The primary negative effect reported was part-time rather than full-time enrollment. Others included difficulty in getting a degree because of duties required by stipend holding and attendance at a university other than the one preferred. However, the more advanced students reported fewer negative effects of stipend holding than beginning students, suggesting that beginning students may have unrealistic expectations about stipend benefits. On the other hand, if the entering graduate student was sufficiently disappointed in the benefits of his stipend, he may have dropped out of school.

Table 7.10 shows the distribution of responses to the question asking about the effects of not having a stipend in 1962-63. As might be expected, students experiencing no delay indicated that the absence of a stipend had no effect on them. The delayed students reported that they had to enroll part time in 1963 and that they had to take a longer time to gain their degrees by working part time as a result of not holding a stipend.

A history of delayed study in graduate school was associated with field of study, stipend holding, and, among stipend holders, with type of stipend held. We now examine some academic characteristics of students classified according to type of delay experienced in graduate school.

TABLE 7.10

PATTERN OF DELAY AND PERCEIVED EFFECTS OF NOT HOLDING A STIPEND DURING 1962-63, CONTROLLING FOR CALENDAR YEARS COMPLETED

(Per Cent Reporting Effects among Students Not Holding Stipends)

| Delayed | | Effects of Not Holding a Stipend during 1962-63[a] | | | | | | | N | NA, Inapplicable |
|---|---|---|---|---|---|---|---|---|---|---|
| Prior to Graduate School | During Graduate School | Shift of Field or Thesis Topic | Attended Nonpreferred University | Enrolled Part Time, Preferred Full Time | Delayed Graduate Work | Temporary Dropout | Part-Time Work Delayed Degree | None | | |
| | | First-Year Students | | | | | | | | |
| No | No | 4 | 12 | 4 | 1 | 3 | 16 | 68 | 121 | 553 |
| No | Yes | -- | 17 | 40 | 7 | 4 | 27 | 43 | 83 | 150 |
| Yes | No | -- | 13 | 6 | 13 | -- | 4 | 73 | 48 | 124 |
| Yes | Yes | -- | 12 | 52 | 15 | 7 | 27 | 38 | 60 | 42 |
| | | Second to Third-Year Students | | | | | | | | |
| No | No | -- | 5 | 5 | 5 | 2 | 7 | 7 | 44 | 650 |
| No | Yes | 2 | 7 | 33 | 5 | 3 | 23 | 23 | 163 | 376 |
| Yes | No | -- | 11 | 5 | 5 | -- | 21 | 21 | 19 | 135 |
| Yes | Yes | 2 | 11 | 38 | 14 | 5 | 20 | 20 | 123 | 150 |
| | | Fourth to Fifth-Year Students | | | | | | | | |
| No | No | -- | -- | 13 | -- | 7 | 13 | 13 | 15 | 315 |
| No | Yes | 1 | 3 | 29 | 4 | 3 | 27 | 27 | 146 | 298 |
| Yes | No | -- | -- | -- | -- | -- | -- | (8) | 8 | 94 |
| Yes | Yes | -- | 6 | 39 | 9 | 4 | 37 | 37 | 126 | 194 |

| | |
|---|---|
| N . . . . . . . . . | 956 |
| NA . . . . . . . . . | 3,081 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

[a]Multiple responses were permitted.

## Academic Correlates of Delay

### Delay and Stage of Study

The Index of Stage of Study measured academic progress by combining the number of academic years of work completed, the degree sought, and the type of work being done. Table 7.11 shows the relationship between delay and academic progress as measured by the Stage Index.

TABLE 7.11

PATTERN OF DELAY AND STAGE OF STUDY, CONTROLLING FOR CALENDAR YEARS OF SCHOOL COMPLETED

(Per Cent of Students in Stage IV-- Currently Working on Their Dissertations)

| Delay | | Stage of Study | |
|---|---|---|---|
| | | Calendar Years in School | |
| Prior | During | Two or Three Years | Four or More Years |
| No | No | 37 (691) | 85 (330) |
| Yes | No | 26 (149) | 73 (102) |
| No | Yes | 16 (533) | 53 (438) |
| Yes | Yes | 13 (267) | 41 (307) |
| NA . . . | | (20) | (19) |

| | |
|---|---|
| N . . . . . . . . . . | 2,817 |
| NA . . . . . . . . . | 39 |
| Inapplicable years | 1,181 |
| Inapplicable . . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . . | 6,814 |

Among second- and third-year students,[8] 37 per cent of the undelayed students were in Stage IV, while only 13 per cent of those delayed both prior to and during graduate study reached this stage of study.

[8]First-year students are not shown in this table because by definition they are all in Stage I.

(Stage IV is defined as students currently engaged in dissertation work or analysis.) Among students with four or more years the pattern was much the same. Delay during graduate school was more important than delay prior to entry in determining likelihood of advanced study, and, of course, students delayed at both points were least likely (85 per cent undelayed compared to 41 per cent totally delayed students) to be in Stage IV.

## Date Degree Is Expected

Another measure of the cost of delay in graduate training is the expected date of degree attainment; this measures loss of productive time. Table 7.12 shows the relationship between history of delay and expected date of completing the Ph.D.

All students, regardless of number of years enrolled, who reported no delays also expected to receive their Ph.D. sooner than students who reported being delayed both prior to and during graduate school. Looking at the effects of delay during graduate school, however, the undelayed students, regardless of number of years of enrollment, expected to get their Ph.D. more than one year earlier than the students delayed during school. Thus the average expected cost of being delayed after entering graduate school was slightly more than one year.

## Institutional Correlates

In Chapter 4 (Table 4.2) school quality was seen to be an important determinant of stipend holding. The quality of the institution a student attended was also related to his history of delay, and the history of delay affected the extent of stipend holding (Table 7.13).

We previously considered the relationship between delay and composite field of study: delay was associated with field of study and the number of calendar years students were in graduate school. With one or two minor exceptions, this pattern still obtained when school quality was controlled, but the proportions of undelayed students within a given field steadily decreased as school quality decreased. Thus delay was associated with all three academic variables. For example, the proportion of undelayed students varied from a high of 77 per cent among physical science students who were in their first year and who attended schools in Group I to a low of 6 per cent among engineering students who had been in school four or more years and who attended schools in Group III.

TABLE 7.12

PATTERN OF DELAY AND MEAN MONTH AND YEAR DOCTORATE IS EXPECTED, CONTROLLING FOR CALENDAR YEARS OF SCHOOL COMPLETED

| Calendar Years Completed | Delayed | | Mean Month and Year Students Expect To Receive Highest Degree | | | |
|---|---|---|---|---|---|---|
| | Prior | During | Month | Year | N | NA |
| Less than one year . . . | No | No | August | 1966 | 608 | 66 |
| | Yes | No | November | 1966 | 148 | 24 |
| | No | Yes | June | 1967 | 194 | 39 |
| | Yes | Yes | August | 1968 | 75 | 27 |
| | --- | No | August | 1966 | 756 | 90 |
| | --- | Yes | October | 1967 | 269 | 66 |
| Two to three years . . . | No | No | February | 1965 | 651 | 43 |
| | Yes | No | June | 1965 | 138 | 16 |
| | No | Yes | January | 1966 | 484 | 55 |
| | Yes | Yes | October | 1966 | 237 | 36 |
| | --- | No | February | 1965 | 789 | 59 |
| | --- | Yes | April | 1966 | 721 | 91 |
| Four or more years . . . | No | No | April | 1964 | 324 | 6 |
| | Yes | No | January | 1964 | 100 | 2 |
| | No | Yes | October | 1964 | 422 | 22 |
| | Yes | Yes | February | 1965 | 287 | 33 |
| | --- | No | November | 1963 | 424 | 8 |
| | --- | Yes | January | 1965 | 709 | 55 |

| | |
|---|---|
| N . . . . . . . . . | 3,668 |
| NA . . . . . . . . | 369 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

TABLE 7.13

PATTERN OF DELAY, SCHOOL QUALITY, AND CALENDAR YEARS IN SCHOOL

(Per Cent Undelayed)

| Calendar Years | Field of Study | School Quality | | |
|---|---|---|---|---|
| | | Group I | Group II | Group III |
| First year | Physical science | 77 (70) | 75 (103) | 52 (155) |
| | Engineering . . . | 60 (43) | 48 (61) | 43 (84) |
| | Life science . . | 66 (41) | 64 (44) | 50 (92) |
| | Behavioral science . . . . | 70 (50) | 60 (79) | 61 (137) |
| | Humanities . . . | 56 (39) | 59 (51) | 40 (110) |
| Second to third year | Physical science | 65 (109) | 47 (187) | 45 (194) |
| | Engineering . . . | 46 (79) | 29 (127) | 25 (115) |
| | Life science . . | 73 (45) | 52 (71) | 33 (147) |
| | Behavioral science . . . . | 63 (73) | 48 (113) | 32 (126) |
| | Humanities . . . | 46 (74) | 26 (76) | 28 (94) |
| Fourth year or more | Physical science | 58 (80) | 33 (131) | 24 (153) |
| | Engineering . . . | 33 (43) | 11 (65) | 6 (85) |
| | Life science . . | 44 (55) | 49 (90) | 32 (84) |
| | Behavioral science . . . . | 32 (65) | 22 (105) | 66 (81) |
| | Humanities . . . | 31 (42) | 11 (47) | 10 (51) |

| | |
|---|---|
| N . . . . . . . . . . . | 3,968 |
| Delay inapplicable . | 1,840 |
| School inapplicable . | 128 |
| Aliens . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

Table 7.14 considers stipend holding in terms of institutional quality and a history of delay. Generally speaking, within each level of school quality, delayed students were less likely to hold stipends than undelayed students, but the differences between delayed and undelayed students in percentages holding stipends increased as quality of school decreased. Thus delay made less difference in stipend holding among students enrolled in Group I schools than in Group III schools. However, several other facts present themselves. The proportions holding stipends were not associated with school quality among undelayed students, but the proportions holding stipends were highly associated with school quality among students experiencing delay. Thus undelayed first-year physical science students were about as likely to hold stipends whether they attended high quality or other schools; but delayed second- and third-year students in the same field were much more likely to hold stipends if they attended high quality instead of other schools.

## Other Correlates of Delay

Other characteristics of graduate students are relevant for understanding delay in graduate study; in particular, current family role and nonstipend employment during the academic year 1962-63.

Table 7.15 shows how graduate students in various family roles have been delayed. Among students enrolled less than one calendar year in graduate school, single students, both men and women, were less likely to have been delayed than either married graduate students or married graduate students with children. Among graduate students enrolled four or more years, the married students without children were least likely to have been delayed.

Both male and female graduate students with family responsibilities were much more likely than students without family responsibilities to have delayed entry into graduate school and to have delayed their studies while in graduate school.

Although we do not know the point in graduate school at which family responsibilities began, students who had families to support in spring, 1963, were more likely than other graduate students to study

TABLE 7.14

COMPOSITE FIELD OF STUDY, HISTORY OF DELAY, AND SCHOOL QUALITY

(Per Cent Holding a Stipend)

| Years in School | Field of Study | Not Delayed | | | Delayed | | |
|---|---|---|---|---|---|---|---|
| | | School Quality | | | School Quality | | |
| | | Group I | Group II | Group III | Group I | Group II | Group III |
| One year | Physical science . . | 89 (54) | 86 (77) | 85 (81) | 81 (16) | 73 (26) | 61 (74) |
| | Engineering . . . . . | 86 (26) | 97 (29) | 81 (36) | 81 (16) | 50 (32) | 58 (48) |
| | Life science . . . . | 96 (27) | 86 (28) | 87 (46) | [14] [14] | 75 (16) | 63 (46) |
| | Behavioral science . | 86 (35) | 70 (47) | 69 (83) | 87 (15) | 59 (32) | 43 (54) |
| | Humanities . . . . . | 73 (22) | 67 (30) | 68 (44) | 47 (17) | 33 (21) | 39 (66) |
| Two to three years | Physical science . . | 96 (71) | 97 (88) | 95 (87) | 90 (38) | 73 (101) | 66 (107) |
| | Engineering . . . . . | 94 (36) | 95 (37) | 97 (29) | 77 (43) | 66 (90) | 52 (86) |
| | Life science . . . . | 100 (33) | 100 (37) | 94 (48) | [9] [12] | 91 (34) | 76 (99) |
| | Behavioral science . | 91 (46) | 89 (54) | 90 (40) | 74 (27) | 68 (59) | 51 (86) |
| | Humanities . . . . . | 82 (34) | 80 (20) | 81 (26) | 55 (40) | 66 (56) | 35 (68) |

TABLE 7.14--Continued

| Years in School | Field of Study | Not Delayed | | | Delayed | | |
|---|---|---|---|---|---|---|---|
| | | School Quality | | | School Quality | | |
| | | Group I | Group II | Group III | Group I | Group II | Group III |
| Four or more years | Physical science . . | 94 (46) | 98 (43) | 94 (36) | 85 (34) | 70 (88) | 56 (117) |
| | Engineering . . . . . | [14] [14] | [7] [7] | [4] [5] | 69 (29) | 62 (58) | 54 (80) |
| | Life science . . . . | 96 (24) | 96 (44) | 93 (27) | 87 (21) | 74 (46) | 75 (57) |
| | Behavioral science . | 95 (21) | 78 (23) | [11] [13] | 70 (44) | 56 (82) | 54 (68) |
| | Humanities . . . . . | [13] [13] | [5] [5] | [4] [5] | 72 (92) | 50 (42) | 35 (46) |

| | |
|---|---|
| N . . . . . . . . . . . . | 3,967 |
| Inapplicable, delay . . | 1,840 |
| NA, stipend . . . . . . | 1 |
| Inapplicable, school . | 128 |
| Aliens . . . . . . . . . | 878 |
| Total N . . . . . . . . | 6,814 |

part time and not to start their studies until more than one year after they had received their bachelor's degrees. The implication is that students with families were delayed due to responsibilities of parenthood.

TABLE 7.15

PATTERN OF DELAY AND FAMILY ROLE, CONTROLLING FOR CALENDAR YEAR IN SCHOOL

(Per Cent Delayed)

| Calendar Years Completed | Delayed | | Family Role | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Men | | | Women | | |
| | Prior | During | Bachelor | Husband | Father | Single | Wife | Mother |
| Less than one year . . . . | No | No | 67 | 58 | 37 | 58 | 50 | 19 |
| | Yes | No | 8 | 13 | 31 | 15 | 12 | 19 |
| | No | Yes | 19 | 22 | 17 | 19 | 32 | 34 |
| | Yes | Yes | 5 | 8 | 15 | 9 | 6 | 28 |
| N . . . . | | | 552 | 186 | 229 | 128 | 34 | 32 |
| Two to three years . . . . | No | No | 52 | 49 | 31 | 44 | 28 | 5 |
| | Yes | No | 10 | 8 | 11 | 5 | 15 | 5 |
| | No | Yes | 30 | 33 | 34 | 34 | 33 | 35 |
| | Yes | Yes | 8 | 9 | 24 | 17 | 23 | 55 |
| N . . . . | | | 527 | 355 | 515 | 147 | 39 | 40 |
| Four or more years . . . . | No | No | 36 | 42 | 21 | 15 | 31 | 6 |
| | Yes | No | 10 | 11 | 7 | 9 | 14 | 9 |
| | No | Yes | 34 | 30 | 41 | 40 | 31 | 38 |
| | Yes | Yes | 20 | 16 | 31 | 37 | 23 | 47 |
| N . . . . | | | 255 | 233 | 560 | 68 | 22 | 32 |

| | |
|---|---|
| N . . . . . . . . . | 3,954 |
| NA . . . . . . . . | 83 |
| Inapplicable . . | 1,899 |
| Aliens . . . . . . | 878 |
| Total N . . . . | 6,814 |

As for nonstipend employment, Table 7.16 shows that students delayed both prior to and during graduate school were most likely to report this form of employment during the academic year 1962-63.

TABLE 7.16

PATTERN OF DELAY AND CALENDAR YEARS IN SCHOOL

(Per Cent Reporting Nonstipend Employment and Per Cent With Regular Full-Time Job)

| Calendar Years Completed | Delayed | | Employment | |
|---|---|---|---|---|
| | Prior | During | Yes | Regular |
| Less than one year . . . | No | No | 63 (674) | 4 (426) |
| | Yes | No | 50 (172) | 9 (82) |
| | No | Yes | 70 (233) | 34 (161) |
| | Yes | Yes | 83 (102) | 69 (85) |
| Two to three years . . . | No | No | 40 (694) | 7 (271) |
| | Yes | No | 43 (154) | 14 (64) |
| | No | Yes | 68 (539) | 37 (368) |
| | Yes | Yes | 68 (273) | 60 (186) |
| Four or more years . . . | No | No | 28 (330) | 12 (89) |
| | Yes | No | 28 (102) | 14 (29) |
| | No | Yes | 61 (444) | 58 (269) |
| | Yes | Yes | 68 (320) | 61 (214) |
| | | | N . . . 4,037<br>Inapp. . 1,899<br>Aliens 878<br>Total 6,814 | N . . . 2,244<br>NA . . 1,793<br>Inapp. . 1,899<br>Aliens. 878<br>Total 6,814 |

Regardless of the number of years of enrollment, students undelayed in the past were least likely to report regular full-time employment and students who were delayed both prior to and during graduate school were most likely to do so. Students delayed prior to but not during graduate school were less likely than those only delayed before entry to have been employed thirty-five hours weekly or more for ten to twelve months of the year.

Under certain circumstances employment also aids the student's professional development, although it may stretch out the time needed for the degree. Many employing organizations provide valuable training experience and career opportunities for those who have not yet completed their degrees. This is suggested by Table 7.17, which shows the proportion of students who worked at regular full-time jobs, controlling for years of enrollment, pattern of delay, and the perceived relevance of the job for the student's anticipated career.[9] Students delayed and whose jobs were the kind they wanted in their chosen field were most likely to be regularly employed. Having a job of the type desired in one's permanent career field increased the likelihood of full-time regular employment among delayed and undelayed students. The most delayed students were far more likely than all others to work regularly full time if they had the kind of jobs they wanted in their career fields.

## Stipend Holding: Past and Future

We now turn to the question of stipend holding among students in this sample who were enrolled in 1961-62, the academic year preceding the period under study. Also considered here are their plans for the academic year 1963-64. Although information about the academic year 1961-62 is sparse, it contributes to an understanding of delay, and in looking at the next academic year (1963-64) we consider how past delays influenced future expectations and plans.

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[9]See Question 42-E, Appendix 4.

TABLE 7.17

PATTERN OF DELAY AND FULL-TIME, NONACADEMIC EMPLOYMENT, CONTROLLING FOR RELEVANCE OF JOB FOR CAREER AND CALENDAR YEARS COMPLETED

(Per Cent Working Regularly, 10-12 Months Per Year)

| Calendar Years Completed | Delayed | | Job Opportunity | |
|---|---|---|---|---|
| | Prior | During | Now Hold Job I Want | Do Not Now Hold Job I Want |
| Less than one year . . . | No | No | 14 (49) | 3 (370) |
| | Yes | No | 24 (17) | 5 (63) |
| | No | Yes | 60 (42) | 25 (117) |
| | Yes | Yes | 73 (33) | 65 (48) |
| Two to three years . . . | No | No | 13 (60) | 5 (207) |
| | Yes | No | 27 (15) | 8 (48) |
| | No | Yes | 50 (133) | 30 (229) |
| | Yes | Yes | 73 (79) | 50 (104) |
| Four or more years . . . | No | No | 20 (39) | 6 (50) |
| | Yes | No | 36 (11) | 0 (17) |
| | No | Yes | 63 (152) | 53 (112) |
| | Yes | Yes | 76 (113) | 46 (96) |

| | |
|---|---|
| N . . . . . . . . . . . . | 2,204 |
| NA work, inapplicable . | 1,833 |
| Inapplicable . . . . . | 1,899 |
| Aliens . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

Stipend Holding, 1961-62

Stipend holding in 1961-62 among graduate students enrolled two or more years at the time of the study is shown in Table 7.18. These data also take into account length of enrollment and pattern of delay.

TABLE 7.18

PATTERN OF DELAY, CONTROLLING FOR CALENDAR YEARS COMPLETED IN SCHOOL

(Per Cent Holding Stipends during 1961-62)

| Delay | | Calendar Years Completed | |
|---|---|---|---|
| Prior | During | Two or three years | Four or more years |
| No | No | 83 (683) | 95 (327) |
| Yes | No | 61 (152) | 85 (101) |
| No | Yes | 50 (528) | 55 (440) |
| Yes | Yes | 33 (265) | 47 (310) |

| | |
|---|---|
| N . . . . . . . . . . . | 2,806 |
| NA, stipend . . . . . | 50 |
| Inapplicable, year . | 1,181 |
| Inapplicable, delay . | 1,899 |
| Aliens . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

As was the case during 1962-63, the undelayed students held stipends more frequently than those who had been delayed, and the longer a student had been in graduate school, the more likely he was to hold a stipend regardless of his pattern of delay. The effect of delay prior to entrance on stipend holding diminished the longer students were in school, but the effect of delay during graduate study did not.

Among current second- and third-year students, 83 per cent of the undelayed held stipends in 1961-62; so did 61 per cent of those delayed only prior to entrance; 50 per cent of the students who delayed during graduate school and only 33 per cent of those delayed at both times.

Among students who had enrolled for four or more years of graduate school at the time of the study, the comparable proportions who held stipends were 95 per cent of the undelayed and 47 per cent among those delayed both prior to and during graduate study.

Table 7.19 shows the relationship between current stipend holding and stipend holding during the academic year 1961-62. Students who were enrolled during both years and who held stipends during 1961-62 were almost without exception stipend holders again in 1962-63. More than nine out of ten stipend holders in 1961-62 were stipend holders in 1962-63: 93 per cent of those enrolled four or more years and 96 per cent of those enrolled two to three years. Among students not holding stipends in 1961-62, the relationship was not as strong: among second- and third-year students not holding a stipend in the previous year, 41 per cent currently held stipends; among students with four or more calendar years of enrollment, 28 per cent of those without stipend support in 1961-62 had it during 1962-63.

TABLE 7.19

STIPEND HOLDING DURING 1961-62 AND CALENDAR YEARS COMPLETED
(Per Cent Holding Stipends during 1962-63)

| Calendar Years Completed | Stipend Holding 1961-62 | |
|---|---|---|
| | Yes | No |
| Two to three years . . . | 96 (1,024) | 41 (549) |
| Four or more years . . . | 93 (788) | 28 (389) |

| | |
|---|---|
| N . . . . . . . . . . . | 2,750 |
| NA, stipend . . . . . . | 106 |
| Inapplicable, year . . | 1,181 |
| Inapplicable, delay . . | 1,899 |
| Aliens . . . . . . . . . | 878 |
| Total N . . . . . . . . | 6,814 |

Table 7.20 shows the likelihood of reporting no delay, taking into account the stipend-holding situation during the two-year period.

Among second- and third-year students, those holding stipends in both academic years were about twice as likely to be undelayed as students holding stipends for only one of the two years, and over three and one-half times as likely to be undelayed as students who did not hold stipends in either year. The association between stipend holding and delay in graduate studies was even more pronounced among students enrolled for four or more years. Among students with only two to three years of enrollment, the proportion not delayed among those holding stipends both years was very much higher than the proportion not delayed among the students who held stipends for only one of the two years, or at neither time: 52 per cent of the students who held stipends in both years were undelayed, compared with only 6 per cent of the students who did not hold stipends in either year. These data show that the pattern of stipend holding over the two academic years, 1961-62 and 1962-63, was even more highly associated with a history of being undelayed than was stipend holding during the one academic year, 1962-63. The likelihood of uninterrupted, full-time study was highest among those holding a stipend both years and lowest among those holding a stipend neither year.

TABLE 7.20

STIPEND HOLDING DURING 1962-63, STIPEND HOLDING DURING 1961-62, AND CALENDAR YEARS OF SCHOOL COMPLETED

(Per Cent Not Delayed in School)

| Calendar Years Completed | Stipend Holding 1961-62 | Stipend Holding 1962-63 | |
|---|---|---|---|
| | | Yes | No |
| Two or three years . . . | Yes | 66 (981) | 30 (43) |
| | No | 38 (224) | 18 (325) |
| Four or more years . . . | Yes | 52 (736) | 19 (52) |
| | No | 14 (107) | 6 (282) |

| | |
|---|---|
| N . . . . . . . . . . . . | 2,750 |
| NA, stipend . . . . . . | 106 |
| Inapplicable, year . . | 1,181 |
| Inapplicable, delay . . | 1,899 |
| Aliens . . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

Plans for 1963-64

Table 7.21 shows the relationship between the expected 1963-64 enrollment and pattern of past delay (taking into consideration number of calendar years of enrollment by the spring of 1963). By and large, the findings confirm the previous analysis. Delayed students were less likely to expect full-time enrollment than undelayed students, and students delayed only prior to graduate school were more likely to expect full-time graduate study than were students delayed during their graduate study.

TABLE 7.21

PATTERN OF DELAY, ACADEMIC EXPECTATIONS FOR 1963-64, AND CALENDAR YEARS IN SCHOOL

(Per Cent with Fall, 1963, Plans)

| Calendar Years Completed | Delayed | | Fall, 1963-64 | | | | | N | NA |
|---|---|---|---|---|---|---|---|---|---|
| | | | Enrolled | | | Not Enrolled | | | |
| | Prior | During | Full Time | Part Time | Total | Done | Dropout | | |
| Less than one year . . . . | No | No | 75 | 17 | 94 | 4 | 4 | 668 | 6 |
| | Yes | No | 62 | 25 | 87 | 7 | 7 | 168 | 4 |
| | No | Yes | 33 | 61 | 94 | 3 | 4 | 232 | 1 |
| | Yes | Yes | 17 | 79 | 96 | 1 | 3 | 100 | 2 |
| Two to three years . . . . | No | No | 72 | 15 | 87 | 7 | 6 | 672 | 22 |
| | Yes | No | 65 | 19 | 84 | 9 | 7 | 150 | 4 |
| | No | Yes | 33 | 51 | 84 | 8 | 7 | 533 | 6 |
| | Yes | Yes | 23 | 65 | 88 | 7 | 5 | 270 | 3 |
| Four years or more . . . . | No | No | 51 | 13 | 64 | 33 | 3 | 317 | 13 |
| | Yes | No | 36 | 20 | 56 | 37 | 7 | 95 | 7 |
| | No | Yes | 25 | 52 | 77 | 17 | 6 | 430 | 14 |
| | Yes | Yes | 20 | 55 | 75 | 18 | 7 | 305 | 15 |

| | |
|---|---|
| N . . . . . . . . . . . . . . | 3,940 |
| Next year NA, inapplicable . | 97 |
| Inapplicable . . . . . . . . | 1,899 |
| Aliens . . . . . . . . . . . | 878 |
| Total N . . . . . . . . . | 6,814 |

As years in graduate school increased, expectations of part-time employment in 1963-64 decreased even among the most delayed students. Thus first-year graduate students were more likely to expect part-time enrollment if they had been delayed both prior to and during graduate school than were students also delayed at both times who had been enrolled a longer time.

What about students who did not expect to be enrolled in 1963-64? Students enrolled for less than four years showed little variation in the chances of completing studies, or plans for interrupting studies when history of delay is considered. However, students enrolled in graduate school for four or more years were differentiated on the basis of past delay: those experiencing any delay in the past were more likely to expect to interrupt their studies the next year than those students not delayed in the past. However, only delay during graduate school, and not prior to it, affected completion of studies. Between 33 and 37 per cent of the students not delayed since entering graduate school expected to receive their degrees in the following year, but only 17 per cent of the students who were delayed since they entered graduate school expected to finish by this time.

Table 7.22 shows the stipend holding expectation of those students who planned to be enrolled during the academic year 1963-64. Students' expectations in this realm confirm our analysis: with each increase in the number of calendar years in graduate school, the influence of delay prior to entrance lessened, and the longer students were enrolled, the more likely they were to hold stipends. Undelayed students were the most likely to expect stipends in 1963-64; and students delayed only prior to graduate enrollment were more likely than those delayed after enrollment to expect stipends; the latter, in turn, were more likely than those delayed both ways to expect stipends.

Readiness for Full-Time Study

Responses of part-time graduate students to the question "What is the least it would take to get you into graduate studies full time?" were analyzed in Chapter 3.[10] The same question is considered here for

[10] See Tables 3.12-3.15.

students enrolled part time in spring, 1963, in light of the experience with delay.

TABLE 7.22

PATTERN OF DELAY AND ANTICIPATED STIPEND HOLDING DURING 1963-64, CONTROLLING FOR CALENDAR YEARS IN SCHOOL

(Per Cent Expecting to Hold a Stipend)

| Delay | | Calendar Years Enrolled | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | First Year | | | Second to Third Year | | | Fourth Year or More | | |
| Prior | During | Stipend Yes | N | NA | Stipend Yes | N | NA | Stipend Yes | N | NA |
| No | No | 72 | 603 | 18 | 80 | 581 | 24 | 80 | 201 | 13 |
| Yes | No | 58 | 139 | 2 | 72 | 126 | 1 | 68 | 53 | 5 |
| No | Yes | 52 | 215 | 10 | 53 | 442 | 13 | 48 | 335 | 9 |
| Yes | Yes | 21 | 94 | 4 | 41 | 234 | 7 | 40 | 230 | 14 |

| | |
|---|---|
| N . . . . . . . . . . . | 3,253 |
| NA, stipend . . . . . | 102 |
| NA, not enrolled . . | 664 |
| Inapplicable . . . . | 1,899 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . . . | 6,814 |

According to Table 7.23, only among students enrolled four or more years was there no relationship between amounts of money needed to permit full-time enrollment and delay prior to entrance. Forty-eight per cent of the first-year students not delayed prior to initiation of graduate study said that they would enroll if given $2,000 or less over their tuition. In contrast, only 29 per cent of the students delayed prior to entrance would enroll full time for a stipend of this size. Further, 23 per cent of the first-year students delayed only since entrance said that $4,000 over tuition would not be enough, but 30 per cent of those delayed both prior to and since enrollment would not go full time for this amount.

A similar pattern held among the second- and third-year students, although fewer would enroll full time for $2,000 over tuition and more would not consider tuition plus $4,000 sufficient to go full time. Students delayed only during graduate school would enroll more frequently at all levels of support for less than $4,000 than students delayed in both ways. Equal percentages of students, regardless of delay, would enroll full time for tuition plus $4,000, but proportionately more of the totally delayed said that not even this amount was enough.

TABLE 7.23

PATTERN OF DELAY AND AMOUNTS OF MONEY NEEDED TO GET STUDENTS TO ATTEND SCHOOL FULL TIME, AMONG THOSE ATTENDING PART TIME

(Per Cent)

| Calendar Years Completed | Delayed | | Money Needed To Go Full Time | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Tuition Plus | | | | N | NA |
| | Prior | During | $2,000 | $3,000 | $4,000 | None | | |
| Less than one year . . . . . | No | Yes | 48 | 19 | 10 | 23 | 185 | 48 |
| | Yes | Yes | 29 | 21 | 21 | 30 | 96 | 5 |
| Two to three years . . . . | No | Yes | 29 | 24 | 22 | 26 | 371 | 168 |
| | Yes | Yes | 24 | 14 | 22 | 40 | 210 | 63 |
| Four or more years . . . . | No | Yes | 14 | 12 | 28 | 47 | 287 | 157 |
| | Yes | Yes | 18 | 16 | 24 | 42 | 221 | 99 |

| | |
|---|---|
| N . . . . . . . . . . . | 1,370 |
| Inapplicable, money . | 540 |
| Not delayed . . . . . | 2,127 |
| Inapplicable, delay . | 1,899 |
| Aliens . . . . . . . | 878 |
| Total N . . . . . . | 6,814 |

Among students enrolled four or more years, similar proportions reported that they would enroll full time for any given amount of stipend support. And students reporting that tuition plus $4,000 would not be enough to induce full-time enrollment were most frequently found among students enrolled four years or more.

Thus patterns of delay as well as the number of years enrolled in graduate school influenced the amounts needed to get part-time students to attend school full time. The longer part-time students were in school, and the more delayed they had been, the more money they needed and the less adequate for their needs were cash grants of up to $4,000.

## Summary

This chapter focused on the relevance of stipend holding for patterns of delay among students expecting to take the doctorate. Other factors were examined which also influenced the extent to which graduate students maintained full-time, uninterrupted programs of study. A distinction was made between delay occurring before and after entry to graduate school. A majority of first-year students in the physical, life, and behavioral sciences were not delayed either way; the reverse was true among their counterparts in engineering and the humanities. In each field the extent of delay increased with number of calendar years of enrollment. Undelayed students held stipends more frequently than others; recipients of fellowships and research assistantships generally were less likely to have experienced delay than students holding other types of stipends. Delayed students expected to complete their studies for the doctorate about one year later than other students. Other correlates of delay included institutional quality, regular, full-time employment, and family roles.

CHAPTER 8

# SUMMARY OF FINDINGS

This report was prepared to meet the need for information on the sources, types, and amounts of support available to graduate students, the effects of stipend holding on academic progress, and other aspects of graduate education. A summary of the detailed findings is presented in this chapter.

## The Study

The report is based on a sample of graduate students enrolled in accredited degree-granting American graduate institutions during the spring term, 1963. Self-administered schedules were sent to 25,000 students enrolled for study in thirty-seven detailed fields of study, encompassing the physical sciences (11 detailed fields), life sciences (14), behavioral sciences (4), engineering (5), and humanities (2). The data are based on questionnaires completed by 20,114 graduate students sampled from 130 schools.

The text of the report and the tables accompanying the text are based on the above five composite fields. A self-weighted sub-sample was used to form these composite fields of study.

## Chapter 1. Characteristics of Academic and Employment Fields

### Academic Background Characteristics

1. Grade point averages achieved as undergraduates varied by composite field of study; engineering, physical sciences, and humanities recruited students with highest grade point averages.

2. After completing bachelor's degree study, a large majority of students shifted institutions for graduate study. Although this was true

of the majority of the students in each field of study, students in the physical sciences were most likely and students in engineering least likely to have shifted institutions between undergraduate and graduate work.

3. Undergraduate composite field of study was the best predictor of graduate composite field of study. Engineering and physical science students were most likely and behavioral science students least likely to have studied as undergraduates in the same composite field of study.

4. Almost two-thirds of the students entered graduate school within less than one year after completing their bachelor's degree, and, of the remaining students, a large majority entered graduate school within one to three years after receiving their undergraduate degrees. Students in the physical and behavioral sciences were least likely and students in humanities and engineering most likely to have postponed entrance to graduate study after receiving bachelor's degrees.

5. The majority of students reported being in graduate programs which permitted full-time study. However, most students were not attending school full time. About one-fifth were only working on their thesis or on research. Behavioral science students were most likely to be enrolled in full-time study programs, and those in engineering and humanities least likely to be so enrolled. As many engineering students were enrolled in night school or other programs precluding full-time study as were studying full-time.

6. Over three-quarters of the students were involved in course work as a part of their academic activities. The second most frequently mentioned academic activity was research and preparation of theses. Life science students were most likely and humanities students least likely to be working on their theses. About one-fifth of the students reported other academic activities--e.g., preparation for comprehensive language examinations.

7. A majority of students reported spending forty or more hours per week, on an average, in academic pursuits. A large majority of students in life science fields spent this amount of time, about one-half of the physical and behavioral science students did so, and less than one-half of the engineering and humanities students reported spending this amount

of time in academic activities.

8. Although approximately three-fourths of the students expected to receive their doctorate, variation by field of study was wide: Over four-fifths of the students in physical, behavioral, and life sciences compared to three-quarters of the humanities students and less than two-thirds of the engineering students aimed for the doctorate.

9. Approximately 15 per cent of the students expected to receive their degrees in 1963. By 1965 the majority within each field of study, except humanities, expected to receive them. Humanities students expected to take much longer than students in other fields of study.

10. Most students expected to acquire master's degree along the way to the doctorate, but those who did not were more likely to have continued in the same composite field in undergraduate and graduate study. Those who did not anticipate receiving master's degrees were also more likely to have switched institutions before graduate training, less likely to have had a hiatus between receipt of bachelor's degree and entrance to graduate school, and more likely to expect their doctorates at an earlier date than those who expected to receive their master's degrees as well as doctorates.

Employment Characteristics

11. The majority of students in this sample were employed in nonstipend jobs at some time during the academic year. Of the employed students, almost equal proportions were regular full-time employees (ten to twelve months) and occasional full-time employees (one to three months). Students in engineering were most likely to be employed and, if employed, to have regular full-time employment: students in the life sciences were least likely to be employed at all; and students in the life and behavioral sciences were least likely to be regularly employed full time. Sporadic full-time employment (four to nine months) was infrequent.

12. Field of employment typically coincided with composite field of study, although the relationship among engineering students was extremely high and among humanities students, relatively low.

13. The most frequently mentioned employer was a private company, followed by the college or university at which the student was enrolled. Students in engineering and physical sciences were most likely to report private companies as their employers, life science students most likely to report their colleges or universities, and the humanities students, elementary or secondary school systems.

14. Employed engineering students were more likely to be involved in jobs related to their careers and yielding peak earnings than were students in other fields of study. About 40 per cent of the students reported a peak monthly income from employment of $600 or more, the proportion varying by field of study from about three-quarters of the employed engineers to about 20 per cent of the employed humanities and life science students.

## Chapter 2. Stipend Holding in American Graduate Schools

This chapter described stipend and related employment characteristics of American graduate students.

1. Field of study was the most important determinant of stipend holding. Extent of stipend holding varied from a low of 46 per cent in the humanities to a high of 80 per cent in the life sciences, with an average of 66 per cent across all fields of study. About one out of five students also held a second stipend: the frequency of these also varied by field of study.

2. Type of support within a field of study varied: fellowships and research assistantships were dominant in the life and behavioral sciences, teaching and research assistantships in the physical sciences, teaching assistantships in humanities, and scholarships in engineering. Students in the life sciences were far more likely than others to have received fellowships and research assistantships followed by students in the behavioral and physical sciences. Students in engineering and, particularly, in humanities were least likely to hold these types of stipends.

3. Over all fields, about two-thirds of all stipends came from sources other than the Federal government. The most prominent single

source was the university the student attended. Forty-five per cent reported receiving stipends from their universities. About 10 per cent of the students reported receiving stipends from each of the following sources: industrial or business corporations, the National Science Foundation, and the Public Health Service. These were the next largest sources of support. The Federal government was prominently identified with providing graduate student support in some fields but not in others. Close to one-half of the students in the life sciences held a first stipend that came from Federal agencies, as did about four out of ten of the stipend holders in the behavioral sciences, one-third in the physical sciences, three out of ten in engineering, and only one out of ten in the humanities. The second and third largest sources of support varied by field of study, discounting the college or university of attendance. Students in the physical sciences were most likely to receive support from the National Science Foundation and industrial or business corporations, students in engineering from industrial or business corporations, the life science students from one of the agencies of the Public Health Service and the National Science Foundation, the behavioral science students from the National Science Foundation, and students in humanities from state or local government.

4. Sources and types of stipends were combined and compared in each field of study. Students in all fields most commonly held university- or college-granted teaching assistantships: other frequently held stipends were university-granted research assistantships (only failing to occur with high frequency among humanities students). The remaining source-types most commonly reported were: National Institutes of Mental Health and National Science Foundation fellowships in the life sciences, National Science Foundation fellowships in the physical sciences, industrial or corporation scholarships and fellowships in engineering, National Institutes of Mental Health fellowships in the behavioral sciences, and university or college scholarships and fellowships in the humanities.

5. Cash value of all stipends held was higher in those fields of study which had a greater proportion of students holding them than they were in those fields in which the students were less likely to hold stipends. Median cash values ranged from a high of $2,700 in the life sciences to a low of $2,000 in the humanities.

6. Stduents were asked to estimate their own cumulative graduate grade point averages. In general, the higher the grade point average, the higher the proportion of students holding stipends, although the actual proportion may vary considerably with field of study. Grades made little difference among students in the life sciences and engineering fields and considerable differences among students in the behavioral sciences and humanities.

An index of academic stage of study was constructed. It was also regarded as a factor influencing stipend holding. Although stage, as well as grade point average, made considerable difference in the proportion of students receiving stipends, it, too, was not as highly assoicated with stipend holding as was field of study. When the three academic variables, field of study, stage of study, and grade point average, were combined to ascertain their joint effects on stipend holding, field of study remained the crucial determinant of levels of stipend holding, but within each field there was a distinctive pattern of stipend holding accounted for by the remaining two academic variables. For students in the life sciences, sheer academic survival almost guaranteed some form of stipend support, but for students in the behavioral sciences and humanities, grade point average continued to affect stipend holding within each stage of study.

7. In general, students were less likely to hold scholarships as they advanced academically, were more likely to hold fellowships as they moved to Stage III (doctoral work), and were also more likely to hold research assistantships in the final stage of study. The proportions of students holding teaching assistantships increased from Stage I through Stage III, but dropped again among students in Stage IV. Type of stipend most commonly held among students in Stages I and IV varied by field of study. The most common duties required of students holding stipends requiring duties were work on research directed by someone else and instruction of undergraduates. Students in engineering and life and behavioral sciences were most likely to report work on someone else's research, and humanities students most likely to undertake instruction of undergraduates. Duties of physical science students were evenly distributed.

8. Nonacademic characteristics of respondent--sex, marital status and presence of children, and employment--were associated with stipend holding. Stipend support and full-time regular employment typically operated as alternate modes of gaining income for students enrolled in graduate school. Single students were more likely than parents to hold stipends. Women were less likely to hold stipends than their male counterparts at each level of family responsibility. Although nonstipend employment was inversely related to stipend holding, variation occurred by field of study. Over 90 per cent of the unemployed life science students held stipends, compared to less than 70 per cent of the same students in the humanities.

9. A comparison between stipend holding in 1958 (based on a previous NORC study) and in 1963 revealed only slight changes. The proportions of students reporting stipends in the life and behavioral sciences were higher in 1963 and the proportions of students in the physical sciences and humanities were lower in 1963.

## Chapter 3. Enrollment for Graduate Study and Stipend Support

1. Because enrollment in graduate study programs reflects the loose structure of graduate education, an index of full- and part-time enrollment was formed, using three related dimensions: programs in which full-time study was possible, relative course-loads, and average number of hours spent in academic study. Using this classification, 58 per cent of the students were engaged in full-time study during the spring term in 1963. The proportions of students enrolled full time varied by field of study; students in life sciences were most often enrolled full time and those in engineering least often.

### Academic Correlates

2. Enrollment and stipend holding were highly associated--students enrolled full time were far more likely to hold stipends than those enrolled part time. However, among students enrolled full time, field of study was still a major influence on stipend holding. Life science students were most likely to hold stipends; humanities students were least likely to do so. Indeed, students in the life sciences enrolled part time were more

likely to hold stipends than humanities students who were enrolled full time.

3. Type of first stipend held varied by enrollment; students enrolled full time were more likely to hold fellowships or research assistantships, and students enrolled part time were more likely to hold scholarships or teaching assistantships. Among full-time students in each field of study, excepting the physical sciences and humanities, both fellowship and research assistantships were most prevalent. There was greater variation in stipend types by field among part-time students. In the life and behavioral sciences, research and teaching assistantships were most common; among physical science and humanities students teaching assistantships were most common; and among engineering students scholarships were most frequent.

4. Full-time students were more likely than part-time students to report Federal sources for stipend support, especially from the Public Health Service and the National Science Foundation. Part-time students were more likely than full-time students to receive stipends from non-Federal sources, from business or industrial corporations in particular. Among students enrolled full time, Federal sources varied from a high of almost 50 per cent for students in life sciences to a low of less than 5 per cent for students in humanities. Among part-time students in the same fields, exactly the opposite proportion reported non-Federal sources of stipend support.

5. With every advance in progress through graduate school (as measured by Stage of Study) the proportion of students enrolled full time increased. Students in the life and physical sciences were most likely to be enrolled full time in advanced stages and those in engineering least likely to be so enrolled in the early stages. In the later stages of study, field differences in the proportions of students enrolled full time decreased.

6. Students with high grade point averages were more likely to be enrolled full time than students of lesser academic achievement, and, although this was true in all fields, it was particularly true in humanities, engineering, and physical science. However, field differences in enrollment still persisted--students with lowest grade point averages in the life

sciences were much more likely to be enrolled full time than students with the highest averages in the humanities. Students of low academic achievement in advanced stages were more likely to be enrolled full time than those of high academic achievement in early stages. However, in the life sciences, students reported full-time enrollment at early stages of study more frequently even when they were performing below the academic level attained by a majority of their peers in other fields.

7. The best predictor of full-time enrollment was whether a graduate student held a stipend. Within each academic stage and grade point average level, rates of full-time study were at least twice as high for stipend holders than for those without stipends. Among stipend holders, however, stage of study and grade point average influenced the proportion of students enrolled full time, with the former most influential of the two.

## Nonacademic Correlates

8. Bachelor men were more often enrolled full time than husbands, who in turn were more often enrolled than fathers. Single and married women were equally enrolled full time, but mothers were least likely of all groups to be so enrolled. Both field of composite study and family role were influential: within each family role category, women were less likely to be full-time students than men in that field, but all the women in the life sciences were slightly more likely to be enrolled full time than were their male counterparts in humanities and engineering.

9. Enrollment status and nonstipend employment were interdependent. Less than one-half of the students enrolled full time were employed, but about four-fifths of the part-time students were. Enrollment was also influenced by hours of work per week spent in employment. Almost none of the students enrolled full time held regular full-time jobs, but about one-half of the part-time students were so employed. Students in the life sciences were least likely to be employed at all or employed full time, whether they were part- or full-time students. Engineering students were most likely to hold jobs and to hold regular full-time jobs, whether they were part- or full-time students.

Readiness for Full-Time Study

10. In response to a question on the least amount of money it would take to get a part-time student to undertake full-time study, the majority of part-time students reported they would participate in graduate studies as full-time students for a $4,000 stipend involving no obligations plus tuition. Only 20 per cent of the part-time students reported they would consider full-time study for a $2,000 stipend with the same residual benefits. Students in engineering and physical sciences were least likely to consider attending school full time for $4,000 or less, and those in humanities and life science were most likely to find these stipends sufficient for full-time study.

11. The most important factor in addition to field of study that accounted for a part-time student's willingness to undertake full-time study for a stipend of $4,000 or less was family role. Readiness for full-time study decreased with each step into the web of family involvement. In general and within each field of study, the amount of money needed to attend school on a full-time basis increased as family involvement increased, but fathers in the humanities were more likely to attend full time for less money than fathers in engineering.

12. Students who stated that a $4,000 stipend with no obligations plus a tuition scholarship was not sufficient for full-time study were asked to explain why this was so. The primary reasons given were family or economic obligations (such as "already in debt $6,000," "house payments are too great"), an active preference for part-time study, near completion of graduate work, and the importance of on-the-job training for the student's career. The pattern of reasons given for not studying full time were most efficiently explained with reference to the graduate student's family role.

Chapter 4. Institutional Correlates of Graduate Stipends

This chapter analyzed differences in rates of stipend holding, types of stipends, stipend sources, and amounts held by students attending different types of graduate schools. The sample of students within fields of study had to be adjusted to represent schools rather than students. This refinement produced a sample of eighty-nine schools with 5,808 students.

1. Institutional variables considered to be of primary importance were quality of graduate school, whether the institution was publically or privately controlled, and size of student body enrolled at a school.

2. The proportions of students enrolled in school full time, who were farthest along in academic progress, and who had received high grades as undergraduates all varied by school quality and control. Higher quality schools had larger proportions of students attending school full time who were in advanced stages of study and who had higher grade point averages as undergraduates. Students attending high quality schools which were privately controlled were even more likely to have these academic characteristics. However, students in other private schools were less likely to be enrolled full time than students in comparable public schools. Field of study differences persisted in the proportions of students enrolled full time and in advanced stages of study; students in the life and physical sciences fared better in these respects than students in engineering and humanities.

3. Students in high quality schools were more likely to hold stipends than students in other schools. This was also true for multiple stipend holding: the higher the quality of the school, the more likely were graduate students to report having held a second or even a third stipend. In all five composite fields of study, more than six out of ten students in high quality schools held stipends; in four of the five fields, three-fourths or more of the students had at least one stipend, and one-fifth or more had two. Thus students in high quality schools were well supported.

Control and size of graduate school made almost no difference in stipend holding.

Combining both school quality and control showed that school quality made a difference in the extent to which students in the five composite fields held stipends, while control made a difference after taking quality into account. Thus students at high quality public schools usually reported the highest levels of stipend holding.

4. Except for the humanities students, students in high quality schools were more likely to hold fellowships or research assistantships and

less likely to hold scholarships or teaching assistantships than students in other schools. Among students attending public schools, the most common type of stipend was an assistantship; among students in private schools the most common type was a fellowship, except in engineering, a field providing scholarships.

Small schools more frequently provided scholarships than large schools, but large schools were more generous with assistantships. In the four science and engineering fields, students in small schools more frequently held scholarships than students in large schools, the opposite being true for humanities students.

In four of the five fields of study, students in high quality private schools held fellowships more frequently than students in high quality public schools, and students in other public schools more often held teaching assistantships than students enrolled in comparable private schools. Thus the effects of control and quality of school were additive: fellowships were more frequently held in high quality private schools and teaching assistantships in other schools.

5. Except for students in the life sciences, who were more likely to receive stipends from Federal sources if they attended public schools, there were no differences in Federal sources of stipend support. In all fields, however, students attending public schools reported stipends from their colleges or universities more often than students in private schools. Level of Federal support for students in the physical and life science fields attending high quality schools was higher than it was for students in the other fields of study.

Controlling for both school quality and type of institution, in two-thirds of the possible comparisons, private school students reported stipend support from the Federal government more frequently than did public school students. There was great variation in extent of Federal support by field of study: at one extreme, 78 per cent of the life science students in high quality private schools held Federally granted stipends, and, at the other extreme, only 2 per cent of the humanities students in these same schools held stipends from this source.

6. Students in the physical, life, and behavioral sciences who attended private schools reported stipends worth $300 more than the same students in public schools. The opposite was true for engineering students.

A direct relationship obtained between quality of graduate school and median value of all stipends held: the higher the quality of the graduate school, the higher the value of all stipends. Students in high quality schools, depending on field of study, received stipends worth $200 to $800 more than students in medium quality schools, and the students in medium quality schools received between $300 and $900 more than students in other schools.

7. Depending on field of study, students who attended high quality private schools reported stipends between $500 and $1,000 greater than those obtained by students in comparable public schools; those who attended other public schools reported stipends worth between $100 and $1,200 more than did students in comparable private schools. Dollar amounts reported as income from stipends were as follows: students in all five fields who attended high or medium quality schools received more than $2,000; in high quality schools students in physical and life sciences and in engineering fields bettered this figure by over $1,000. Indeed, except for students in the humanities, stipend recipients in high quality private schools reported stipends worth over $3,000.

## Chapter 5. Sources of Income

This chapter described the sources of income of American graduate students enrolled for study during the spring of 1963.

1. Median income from all sources was $5,200. Fifty-seven per cent of the students reported income from nonstipend employment, 28 per cent from spouse's employment, and 66 per cent from all stipends held. The median cash values of these respective sources were $4,500, $3,200, and $2,400. The median cash value of gifts received from parents or relatives was relatively small, totaling $500.

2. Combining frequency of occurrence and proportional contribution to total income, stipends and employment were found to be very important sources of income and spouse's employment unimportant.

Academic Correlates

3. The importance of sources varied by field of study: stipends only were very important for students in life sciences, and only nonstipend employment was very important for students in humanities. In the other fields of study, combinations of these two sources were categorized as very important. Students in engineering were far more likely to have higher total incomes than students in the other fields. Students in the other fields were quite similar in terms of median total incomes.

4. The level and importance of sources of income varied by stipend holding and by type of first stipend held. Students not holding stipends and students holding scholarships had higher median total incomes than the other students.

Furthermore, both reported only nonstipend employment as the very important source of income. On the other hand, students holding fellowships or assistantships reported only their income from stipends as very important. Students holding assistantships had the lowest total incomes. Students holding fellowships had the most favorable situation in graduate school, both academically and financially.

5. Enrollment status was highly associated with the importance of sources of income and level of total income. Students attending school full time had stipends as their only very important source and had a median total income of $4,000, compared to part-time students, whose employment income was the only source categorized as very important and whose median total income was $7,300. Full-time students required a combination of sources to achieve their total income levels, but part-time students relied heavily on a single source for this.

6. Although total median income did not vary by stage of study, the importance of sources of income did. Stipend income was a more important source of support as stage of study advanced, while the other sources, nonstipend employment and spouse's employment, decreased in importance as students advanced. Among students in earlier stages, all three sources were classified as very important, but among students in the most advanced stage only stipends were.

7. Except among students in the life sciences, the higher the quality of the school, the lower the students' total median income. The

magnitude of this relationship varied by field, being greatest in engineering and least in behavioral sciences. The proportion of students holding stipends and the median value of all stipends held decreased as school quality declined. These relationships were least noticeable among students in the life sciences and most noticeable among students in engineering and humanities.

The relative importance of sources of income for each field of study was unaffected by school quality. At all school quality levels, more life science students received larger stipend support, and it was a more important source of income among life science students than in the other fields. However, the real or actual importance of sources of income varied considerably by field of study and school quality. In high quality schools stipend income was the most important source. In other schools, however, only in life sciences were stipends so classified in this research, while in engineering and humanities only nonstipend employment was an important source.

Nonacademic Correlates

8. Single female and male students were heavily dependent on stipend and nonstipend employment as income sources, both very important. Although their total incomes and stipend incomes were similar, single females earned twice as much as their male counterparts from nonstipend employment. Husbands and wives were similar in median cash values of their total family incomes, except that student husbands contributed more heavily to family income than did student wives. For both, spouse's employment income was very important, but only among student husbands was their own nonstipend employment categorized as very important. For student mothers, graduate education seemed to be a luxury based on their husband's income; only this source was very important, and their own stipend and employment income was classified in this study as unimportant. Student fathers had lower total medien incomes than student mothers, and their primary sources of support were nonstipend employment and stipend income.

## Chapter 6. Expenses and Loans

This chapter reports on some academic and nonacademic correlates of expenses and loans incurred from July 1, 1962, through June 30, 1963.

### Academic Expenses

1. Total median academic expenses were $400. Of the students holding stipends, 88 per cent reported this income source covered all their academic expenses. Although academic expenses did not vary by field of study, the proportion of them covered by stipends did. Over 90 per cent of the students holding stipends in the physical, life, and behavioral sciences compared to less than 80 per cent of the engineering and humanities students reported that stipends covered academic expenses. Within each field, students attending public schools had considerably lower academic expenses and had a larger proportion of their academic expenses covered by their stipends than students attending private schools.

2. Median value of all academic expenses, of tuition and fees, and of proportions of academic expenses covered by stipends varied by stipend holding and type of first stipend held. In general, stipend income varied directly with the academic costs. Fellowship students had higher academic costs and had a higher proportion of costs covered by stipends. Although their academic expenses were less, students holding assistantships were more like fellowship holders than students holding scholarships. A majority of students holding scholarships had stipend income that failed to cover all academic expenses.

3. Median value of all academic expenses and of tuition and fees was twice as large for full-time students as for part-time students. Five times as many part-time as full-time stipend holders did not have their academic costs covered by stipend income.

4. There were no significant shifts in either total academic expenses or levels of tuition and fees by academic progress (stage of study). However, advanced students received a greater proportion of their academic expenses from stipends than less advanced students.

5. Students in high quality schools had higher academic costs, and the proportion of these costs covered by stipends was greater for these

students. Students in schools of high quality more often attended school full time, held stipends, and were unemployed. The opposite was true for students in other schools. Within each level of school quality, field of study made little difference in total academic expenses; however, differences did exist by field in the amount of coverage stipends gave to total academic expenses.

6. Students regularly employed full time had lower academic expenses and were least likely to receive support for this purpose. The opposite was true for students who were either unemployed or who were occasionally (one to three months) employed full time.

7. In general, academic expenses declined proportionately with each increase in family responsibility, especially among parents. The latter group spent about one-half as much to cover academic expenses as others. Men spent more on education and covered a greater proportion of academic costs with stipends than did women of comparable family status.

Nonacademic Expenses

8. The median of nonacademic expenses was $4,200; the largest expense was rent and food ($2,000). Seventeen per cent of the students reported no health expenses between July, 1962, and June, 1963.

9. Nonacademic expenses were related to stipend holding, types of stipends held, and enrollment status. Both the total cost of living and the proportion spent on the necessities of food and rent varied by these characteristics. The more income students had, the more likely they were to have greater living expenses, and the more likely they were to spend less of this total on "necessities."

10. Living expenses steadily rose as the number of months of full-time nonstipend employment increased, although students working only one to three months were very much like unemployed students. Also, the differences between median living expenses and those specifically for rent and food increased as the number of months of employment increased.

11. Students who were fathers or mothers spent a great deal more on overall living expenses, but rent and food were a smaller portion of

of their total expenses compared to students who were husbands or wives, and these students in turn spent more than single students.

Loans: Educational and Noneducational

12. Students identified the sources and amounts of loans incurred during the time period under study. The loan sources were the National Defense Education Act, other educational sources, and noneducational loan sources. One-fifth of the students borrowed money for a median cash value of $1,000. Most loans were noneducational; 14 per cent borrowed a median of $1,000 from noneducational sources compared to 3 per cent who borrowed from the National Defense Education Act and 5 per cent from other educational sources.

13. Engineering students borrowed more money than students in other fields and were also more likely to borrow for noneducational purposes. Educational loans were most often made by students in the behavioral sciences and the humanities.

14. Full-time students were more likely to borrow money. However, they were less likely to borrow as much, and they were far more likely to borrow for educational purposes. This pattern held within each field of study, although full-time humanities and behavioral science students were more likely than students in the other fields to borrow for educational purposes. Field of study made a greater difference in the proportions borrowing and in the amounts borrowed among students who were enrolled full time than it did among part-time students.

15. Stipend holding and type of first stipend held were not associated with the frequency, amounts, or sources of loans incurred by students in this sample.

16. Students were more likely to avail themselves of educational loans in later stages of study, especially when they were working on their doctoral dissertations.

17. Students who were unemployed during the year were very similar to students who held full-time jobs for ten to twelve months of the year: neither of these groups of students borrowed frequently or much for educational purposes, especially when compared to students who were either

occasionally or sporadically employed. Thus students who worked some (but not all) of the time at full-time nonstipend jobs were those who used loans as a source of income.

18. Although proportionately more men borrowed money, women were more likely to borrow greater amounts of money. Men were also more likely to borrow for educational purposes if they were fathers. Among women, wives were most likely to borrow money to attend school and to borrow the most money for educational purposes, while mothers were the least likely of all students to borrow money for educational purposes.

## Chapter 7. The Delayed Doctorate

In this chapter an analysis is presented of the academic and non-academic correlates associated with patterns of delay among students aiming for the doctorate.

Students were classified as delayed if they postponed entry into graduate school, if they had a history of delay while in school, or if they temporarily suspended their studies. Among students enrolled for differing lengths of time, the above criteria were used to classify students as delayed prior to or after entry into graduate school.

1. As the number of calendar years of enrollment increased, students were more likely to have been delayed during their graduate training: About one-quarter of the first-year students were delayed, compared with about two-thirds of the students enrolled four or more years.

2. A majority of first-year students in the physical, life, and behavioral sciences were not delayed, but a majority of these students in the humanities and engineering were. Among students enrolled four or more years, life science students were much less likely to have been delayed, and those in the humanities and engineering were far more likely to have been delayed than other students.

3. Regardless of the number of years enrolled in school, undelayed students were by far the most likely to have held a stipend, and students delayed both prior to and during school were by far the least likely to hold them. Students who only delayed before entering were more likely to

hold stipends than students only delayed during school. Stipend holders and those without stipends were compared in their patterns of delay. Stipend holders were far less likely to have been delayed during school than those who did not have stipends, regardless of the number of years enrolled in school, and this difference was accentuated, the longer students were enrolled.

4. Among stipend holders, fellowships were held most often by undelayed students; students only delayed prior to entrance most commonly held fellowships; students only delayed while in school most commonly held teaching assistantships; and those delayed at both times most commonly held scholarships. In general, fellowship holders were those least likely to have been delayed while in school, followed by students holding research assistantships. Students holding scholarships were those most likely to have been delayed during school.

5. Delay during school was more frequent among students in early stages of study than delay prior to entry into graduate school; students delayed both prior to and during school were those least likely to have advanced standing.

6. With the exception of students enrolled four or more years, undelayed students expected to receive their degrees, on an average, two years sooner than students delayed at both times. Comparing students not delayed and delayed during school, the average difference in the length of time they expected to take to gain their degrees was slightly over one year.

7. Although life, physical, and behavioral science students were less likely to have been delayed than students in other fields of study, the proportions of these students delayed increased as school quality decreased.

8. Within each level of school quality, delayed students were less likely to hold stipends than undelayed students, but delay made less difference among students in high quality schools than in other schools. School quality made no difference in stipend holding among undelayed students, but delayed students in high quality schools were more likely to hold stipends than delayed students in other schools.

9. Both male and female graduate students with family responsibilities were much more likely than other students to have delayed entry into graduate school and to have been delayed while in graduate school.

10. Regardless of the number of years of enrollment, undelayed students and those only delayed prior to entrance were the least likely to report nonstipend employment or regular full-time jobs; students delayed in both ways were most likely to do so. Among employed students, those in jobs they wanted in their anticipated career fields were more likely to work regularly full time than other employed students.

11. Among students who had been enrolled more than one year, undelayed students were more likely to have held stipends during the previous year (1961-62) than those who had been delayed; the longer students had been in graduate school, the more likely they were to hold stipends. The effects on stipend holding of delay prior to entrance diminished the longer students were in school, but the effects of delay during graduate school did not. Almost all students who held stipends in 1961-62 held stipends in 1962-63, but some students who did not hold stipends then did so in 1962-63. Students holding stipends in both academic years were more likely to have been undelayed than students only holding stipends during one of the two years, and these students were far more likely to have been undelayed than those who did not hold stipends in either year.

APPENDIX 1

SAMPLING METHOD FOR STUDY OF FINANCES
OF GRADUATE STUDENTS[1]

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[1]This Appendix was prepared by Seymour Sudman, Director of Sampling, National Opinion Research Center.

## 1. Sample Design

This study can best be understood as primarily intended to provide detailed information about the financial conditions of graduate students in thirty-seven separate fields. Each field was sampled at a different sampling rate so that sufficient cases would be available in each field. It should be clear that this was not intended to be an efficient sample of graduate schools as such but of the thirty-seven graduate fields of prime interest. Since different sampling methods were used for different fields, one should really describe each field separately. However, this would become too burdensome for the reader, so fields are grouped by the type of sampling used.

## 2. Fields with 100 Per Cent Sampling

Some fields had so few students that all students in the field were included in the sample. That is, a school which had five or more students in a field was included in the sample for this field even though it was not sampled for any other fields. Generally, these small schools were contacted by mail rather than by personal methods. The thirteen fields which were sampled at the 100 per cent rate and the sample sizes of these fields are listed below.

| Field | Total Sample Size |
|---|---|
| Biophysics | 282 |
| Forestry | 710 |
| Astronomy | 328 |
| Metallurgy | 245 |
| Meteorology | 356 |
| Oceanography | 234 |
| All other physical sciences | 502 |
| General physical science | 196 |
| Anatomy | 338 |
| Genetics | 438 |
| Pathology | 212 |
| Pharmacology | 323 |
| Physiology | 695 |

3. Engineering Fields

Five of the fields were in engineering. These fields were sampled separately. The estimated initial sample size for each of the engineering fields was set at 1,250 students to allow for separate analyses of day and evening students, as well as to allow for some nonreturned and unusable questionnaires. From the 129 universities offering graduate work in engineering, 43 selections were made, with probabilities proportionate to the total number of students (both full and part time) enrolled in the following four fields: civil, chemical, electrical, and mechanical engineering. Fourteen schools fell into the sample with certainty.[2]

The number of students and the sampling rate varied by field and school. For fourteen schools which fell into the sample with certainty, the sampling interval for each field was the total number of students enrolled in the United States in that field divided by 1,250. These sampling rates for the five fields are given below:

| | |
|---|---|
| Chemical engineering | 1:2.43 |
| Civil engineering | 1:3.14 |
| Electrical engineering | 1:9.50 |
| Mechanical engineering | 1:4.86 |
| Other engineering | 1:8.08 |

For the other engineering schools selected, the average sample size per school was 25. The actual sample size selected for a school was 25 times the ratio:

$$\frac{\text{Percentage of U.S. enrollment in field in School S}}{\text{Percentage of U.S. enrollment in all four fields in School S}}.$$

4. Science and Humanities Fields

The sampling method for the remaining eighteen science and humanities fields was similar to that used in drawing the engineering student sample. The estimated initial sample size for each field was set at 800

[2]The source of data about engineering schools was Tolliver and Armsby (1961).

to allow for a separate analysis of full-time students, if required. The selection of schools was made with probabilities proportional to total students enrolled in the biological and physical sciences and in mathematics. Seventy-two selections were made and fifteen schools fell into the sample with certainty. (Some of these schools were also in the engineering school sample.)[3]

For the fifteen schools that fell into this sample with certainty, the sampling interval for each field was the total number of students in the United States enrolled in that field divided by 800. These sampling rates are shown at the end of this draft.

For the other schools selected, the average sample size per school was ten. The actual sample size selected for a school was ten times the ratio:

$$\frac{\text{Percentage of U.S. enrollment in field in School S}}{\text{Percentage of U.S. enrollment in all science fields in School S}}\text{,}$$

For some fields, this sampling method led to total samples which were smaller than the required 800 sample. In these cases, the total sample was raised by applying a flat ratio of

$$\frac{800}{\text{Total sample initially selected}}$$

to the sample drawn at each school.

In some schools the required sample for some fields is larger than the total number of students in the fields at that school. For these schools, all graduate students in the fields are selected, and weights will be applied in tabulating the results to increase the samples at these schools to their proper size. This weighting is responsible for the 5 per cent difference between the unweighted sample size of 20,114 and the weighted sample of 21,189.

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[3]The source of data for sampling these fields was Tolliver and Sulkin (1962).

There is the possibility of growth or decline in enrollments from 1961 to 1962. Although sampling rates for each field at each school are computed based on the 1961 enrollment figures, the sample is self-adjusting for any increases or declines in enrollment.

Sampling Rates by Field for Science Schools Selected with Certainty

| | |
|---|---|
| Agriculture | 1:4.19 |
| Biology | 1:3.17 |
| Botany | 1:1.69 |
| Zoology | 1:2.85 |
| All other biological science | 1:5.25 |
| Microbiology | 1:2.46 |
| Biochemistry | 1:2.32 |
| English | 1:17.35 |
| Geography | 1:1.07 |
| Mathematics and statistics | 1:15.84 |
| Chemistry | 1:14.25 |
| Physics | 1:12.71 |
| Geology and geophysics | 1: 3.23 |
| Psychology | 1: 7.17 |
| Anthropology | 1: 1.42 |
| Economics | 1: 5.31 |
| History | 1: 9.82 |
| Sociology | 1: 3.90 |

5. Social Work

The same sampling procedure and the same schools that were sampled for the science and humanities fields were used to sample social work graduate students, but the overall sample size was increased to 1,100 so that a special analysis could be made of part-time students. The overall sampling rates at schools selected with certainty was 1:5.64.

6. Sampling within Schools

Where local representatives had been hired at the large schools, the sampling within schools was done locally using sampling instructions prepared in the Chicago office. Where no local representatives were hired, the entire lists of students in the required fields were obtained from the schools and the sampling was done in Chicago. In either case, a systematic sample was used. After the sampling interval had been computed, a random start was made using a random number table, and the numbers of the students to be sampled were printed using an IBM 1620 computer. These listings were then used to record the names and addresses of the students selected. A copy of the sampling instructions follows as Appendix 2.

7. Sample Execution

The total sample selected for this study consisted of 24,553 graduate students. The total number of returns received in time for processing was 20,114, or 82 per cent of those designated. Co-operation rates by field and school varied only slightly around this average of 82 per cent with the largest differences being in the smallest fields. Table A-1.1 gives the selected samples, the actual returns, and the co-operation rates by field. Table A-1.2 gives the same data by school.

Some readers may be interested in the techniques used to achieve such a high rate of return on an extremely difficult self-administered questionnaire. First, it should be pointed out that graduate students form an elite population and are better able to understand a difficult questionnaire than would be true of a sample of the general population. The major argument used to persuade this group to respond was, of course, the fact that this information was to be used by the Federal government in developing its program of financial aid to graduate students. Thus it was to the general self-interest of the group to respond.

A combination of mail, phone, personal, and telegraphic contacts was used to reach respondents. Initial contacts were by mail either from NORC's Chicago office or locally. At the large schools a special representative was hired to do the mailing and follow-up work locally. At smaller schools, both mailing and follow-up were done from Chicago.

TABLE A-1.1

CO-OPERATION RATES BY DETAILED FIELD OF STUDY

| Field | Sample | Returns | Co-operation Rate |
|---|---|---|---|
| Agriculture. . . . . . . . . . | 756 | 649 | 86 |
| General biology. . . . . . . . | 733 | 581 | 79 |
| Botany . . . . . . . . . . . . | 636 | 545 | 86 |
| Zoology. . . . . . . . . . . . | 756 | 622 | 82 |
| Microbiology . . . . . . . . . | 682 | 576 | 84 |
| Biochemistry . . . . . . . . . | 627 | 554 | 88 |
| Biophysics . . . . . . . . . . | 282 | 236 | 84 |
| Anatomy. . . . . . . . . . . . | 338 | 279 | 83 |
| Genetics . . . . . . . . . . . | 438 | 394 | 90 |
| Pathology. . . . . . . . . . . | 212 | 167 | 79 |
| Pharmacology . . . . . . . . . | 323 | 281 | 87 |
| Physiology . . . . . . . . . . | 695 | 569 | 81 |
| All other biology. . . . . . | 571 | 499 | 87 |
| Social Work. . . . . . . . . . | 1,105 | 859 | 78 |
| English. . . . . . . . . . . . | 700 | 534 | 76 |
| Forestry . . . . . . . . . . . | 710 | 599 | 84 |
| Geography. . . . . . . . . . . | 608 | 510 | 84 |
| Mathematics. . . . . . . . . . | 720 | 588 | 82 |
| General physical science . . | 196 | 170 | 87 |
| Astronomy. . . . . . . . . . . | 328 | 278 | 85 |
| Chemistry. . . . . . . . . . . | 778 | 666 | 86 |
| Metallurgy.. . . . . . . . . . | 245 | 222 | 91 |
| Meteorology. . . . . . . . . . | 356 | 291 | 82 |
| Physics. . . . . . . . . . . . | 727 | 611 | 84 |
| Geology and geophysics . . . | 657 | 514 | 78 |
| Oceanography . . . . . . . . . | 234 | 199 | 85 |
| Other earth and physical science | 502 | 327 | 65 |
| Psychology . . . . . . . . . . | 898 | 771 | 86 |
| Anthropology . . . . . . . . . | 774 | 590 | 76 |
| Economics. . . . . . . . . . . | 1,026 | 822 | 80 |
| History. . . . . . . . . . . . | 760 | 594 | 78 |
| Sociology. . . . . . . . . . . | 772 | 635 | 82 |
| Chemical engineering . . . . | 969 | 800 | 83 |
| Civil engineering. . . . . | 1,015 | 838 | 83 |
| Electrical engineering . . . | 1,231 | 987 | 80 |
| Mechanical engineering . . . | 1,220 | 970 | 80 |
| Other engineering. . . . . . | 973 | 792 | 81 |
| Gross total. . . . . . | 24,553 | 20,114 | 82 |

TABLE A-1.2

CO-OPERATION RATES BY GRADUATE SCHOOL

| School | Sample | Returns | Co-operation Rate |
|---|---|---|---|
| University of Calif. (Berkeley) | 1,016 | 791 | 78 |
| University of Minnesota. . . . | 797 | 729 | 91 |
| University of Wisconsin. . . . | 709 | 643 | 91 |
| University of Michigan . . . . | 670 | 564 | 84 |
| University of Illinois . . . . | 604 | 563 | 93 |
| Ohio State University. . . . . | 547 | 481 | 88 |
| Columbia University. . . . . . | 527 | 396 | 75 |
| University of California at Los Angeles . . . . . . . . | 485 | 370 | 76 |
| University of Washington . . . | 483 | 400 | 83 |
| Michigan State University of Agriculture. . . . . . . . | 460 | 361 | 78 |
| Syracuse University. . . . . . | 449 | 337 | 75 |
| University of Pennsylvania . . | 448 | 337 | 75 |
| University of North Carolina at Chapel Hill . . . . . . . | 421 | 316 | 75 |
| Massachusetts Institute of Technology . . . . . . . . . | 417 | 334 | 80 |
| Purdue University. . . . . . . | 415 | 393 | 95 |
| New York University. . . . . . | 408 | 283 | 69 |
| Yale University. . . . . . . . | 407 | 331 | 81 |
| University of Texas. . . . . . | 402 | 328 | 82 |
| University of Maryland . . . . | 382 | 335 | 88 |
| Hunter College . . . . . . . . | 380 | 281 | 74 |
| Cornell University . . . . . . | 361 | 276 | 76 |
| Oregon State College . . . . . | 359 | 312 | 87 |
| Polytechnic Institute of Brooklyn . . . . . . . . . . | 359 | 240 | 67 |
| University of Tennessee. . . . | 350 | 295 | 84 |
| Pennsylvania State University | 324 | 302 | 93 |
| The State University of Rutgers. . . . . . . . . . . | 318 | 259 | 81 |
| University of Oregon . . . . . | 313 | 262 | 84 |
| State University of Iowa . . . | 312 | 288 | 92 |
| Catholic University of America | 306 | 233 | 76 |
| University of Chicago. . . . . | 297 | 242 | 81 |
| University of Kansas . . . . . | 297 | 264 | 89 |
| Wayne State University . . . . | 296 | 237 | 80 |
| University of Missouri . . . . | 294 | 217 | 74 |
| Harvard University . . . . . . | 290 | 199 | 69 |
| University of Pittsburgh . . . | 288 | 237 | 82 |
| Tulane University of Louisiana | 287 | 223 | 78 |
| University of Kentucky . . . . | 275 | 234 | 85 |
| Iowa State University. . . . . | 272 | 252 | 93 |

TABLE A-1.2--Continued

| School | Sample | Returns | Co-operation Rate |
|---|---|---|---|
| Northeastern University. . . | 270 | 223 | 83 |
| Adelphi College. . . . . . . | 266 | 167 | 63 |
| University of Utah . . . . . | 266 | 203 | 76 |
| University of Massachusetts. | 255 | 215 | 84 |
| St. Louis University . . . . | 253 | 233 | 92 |
| University of Notre Dame . . | 250 | 202 | 81 |
| Union College and University | 246 | 165 | 67 |
| Western Reserve University . | 245 | 213 | 87 |
| University of New Mexico . . | 213 | 166 | 78 |
| Okla. State Univ. of A. & A.S. | 200 | 142 | 71 |
| Case Institute of Technology | 198 | 176 | 89 |
| University of Southern California . . . . . . . . | 193 | 143 | 74 |
| University of Arizona. . . . | 190 | 163 | 86 |
| University of Cincinnati . . | 188 | 169 | 90 |
| Stanford University. . . . . | 179 | 137 | 77 |
| Brandeis University. . . . . | 178 | 130 | 73 |
| Johns Hopkins University . . | 172 | 149 | 87 |
| Louisiana State University and Agricultural and Mechanical College . . . . | 158 | 136 | 86 |
| California Institute of Technology . . . . . . . . | 154 | 147 | 95 |
| Montana State College. . . . | 153 | 143 | 93 |
| Rensselaer Polytechnic Institute. . . . . . . . . | 152 | 117 | 77 |
| Georgia Institute of Technology . . . . . . . . | 149 | 102 | 68 |
| Brown University . . . . . . | 148 | 136 | 92 |
| Princeton University . . . . | 148 | 105 | 71 |
| Florida State University . . | 143 | 120 | 84 |
| Newark College of Engineering | 139 | 102 | 73 |
| North Dakota Agricultural College. . . . . . . . . . | 137 | 128 | 93 |
| San Francisco State College. | 131 | 117 | 89 |
| University of Houston. . . . | 130 | 114 | 88 |
| University of Mississippi. . | 130 | 124 | 96 |
| University of New Hampshire. | 127 | 106 | 83 |
| Miami University (Ohio). . . | 124 | 99 | 80 |
| University of Detroit. . . . | 123 | 101 | 82 |
| Rice University. . . . . . . | 116 | 107 | 92 |
| Washington University (Mo.). | 109 | 95 | 87 |
| Temple University. . . . . . | 108 | 87 | 81 |
| City College of New York . . | 106 | 68 | 64 |
| University of California at Davis . . . . . . . . . | 103 | 92 | 89 |

TABLE A-1.2--Continued

| School | Sample | Returns | Co-operation Rate |
|---|---|---|---|
| Drexel Institute of Technology | 102 | 74 | 73 |
| Agricultural and Mechanical College of Texas . . . . . . | 101 | 85 | 84 |
| Illinois Institute of Technology | 97 | 85 | 88 |
| University of Tulsa. . . . . . | 90 | 81 | 90 |
| Worcester Polytechnic Institue | 89 | 81 | 91 |
| Stevens Institute of Technology | 88 | 74 | 84 |
| Colorado State University. . . | 79 | 69 | 87 |
| Auburn University. . . . . . . | 75 | 61 | 81 |
| Canisius College . . . . . . . | 75 | 54 | 72 |
| University of California at La Jolla . . . . . . . . . . | 72 | 67 | 93 |
| Indiana State Teachers College | 71 | 63 | 89 |
| State University of Utah . . . | 69 | 55 | 80 |
| New Mexico State University of Agriculture, Engineering and Science. . . . . . . . . . . | 65 | 54 | 83 |
| Southern Methodist University. | 63 | 54 | 86 |
| Villanova University . . . . . | 61 | 47 | 77 |
| Indiana University . . . . . . | 59 | 50 | 85 |
| Georgetown University. . . . . | 53 | 40 | 75 |
| Queens College . . . . . . . . | 47 | 37 | 79 |
| Louisiana Polytechnic Institute | 43 | 34 | 79 |
| Marquette University . . . . . | 41 | 30 | 73 |
| The Rockefeller Institute. . . | 38 | 29 | 76 |
| St. Joseph's College . . . . . | 38 | 29 | 76 |
| Ohio University. . . . . . . . | 37 | 31 | 84 |
| Duke University. . . . . . . . | 35 | 33 | 94 |
| University of Buffalo. . . . . | 34 | 27 | 79 |
| Texas Woman's University. . . . | 33 | 26 | 79 |
| Kansas State Teachers College. | 30 | 30 | 100 |
| Medical College of Virginia. . | 30 | 23 | 77 |
| University of Rhode Island . . | 30 | 22 | 73 |
| University of Denver . . . . . | 27 | 23 | 85 |
| George Washington University . | 26 | 21 | 81 |
| Schools with sample sizes of less than 20: | | | |
| University of Idaho. . . . . . | 17 | 12 | 71 |
| University of Georgia. . . . . | 15 | 13 | 87 |
| University of Miami. . . . . . | 14 | 13 | 93 |
| University of Puerto Rico. . . | 13 | 7 | 54 |
| University of Florida. . . . . | 13 | 8 | 62 |
| Montana State University . . . | 12 | 10 | 83 |

TABLE A-1.2--Continued

| School | Sample | Returns | Co-operation Rate |
|---|---|---|---|
| San Jose State College . . . . | 12 | 11 | 85 |
| Drake University . . . . . . . | 11 | 9 | 82 |
| New Mexico Institute of Mining | 10 | 7 | 70 |
| Northern Illinois University . | 10 | 7 | 70 |
| Trenton State College. . . . . | 10 | 7 | 70 |
| Indiana State College. . . . . | 9 | 7 | 78 |
| United States Naval Postgraduate School. . . . . | 6 | 5 | 83 |
| Virginia Polytechnic Institute. . . . . . . . . . | 6 | 4 | 67 |
| University of Maine. . . . . . | 5 | 5 | 100 |
| San Diego State College. . . . | 5 | 4 | 80 |
| Bowling Green State University | 4 | 4 | 100 |
| University of Colorado . . . . | 4 | 3 | 75 |
| Kansas State College of Pittsburg. . . . . . . . . . | 2 | 1 | 50 |
| Central Missouri State College | 1 | 0 | 0 |
| Long Beach State College . . . | 1 | 1 | 100 |
| Drury College. . . . . . . . . | 0 | - | - |
| Lawrence College . . . . . . . | 0 | - | - |
| Total, all schools. . . . | 24,553 | 20,114 | 82 |

The personal representatives who were hired at the largest schools were trained by phone and mail. The special instructions used for these representatives follow as Appendix 2, Part B. The pay schedule used for these representatives had a bonus feature which increased the salary as the percentage completed increased.

For schools which were handled directly from Chicago, the first mailing was followed by two additional mailings to students who did not respond, the second by special delivery and the third by certified mail.

In the final month of the field operation, all refusals were handled from the Chicago office. A special night letter was telegraphed to all outstanding cases asking for their co-operation. At the same time, another copy of the questionnaire was mailed by special delivery. This night letter method was extremely successful, eliciting replies from one-third of those who had not yet responded. As a final step the departmental chairmen were asked to send night letters to nonrespondents urging them to return a completed questionnaire. This tactic was also quite effective. The chairmen also identified sampled students who were not enrolled during the study period.

8. The Self-weighted Sub-sample

The five composite fields of study were assembled as follows:

1. The 20,114 students who returned usable, completed questionnaires were weighted up to 21,189 (see paragraph 4, above, of this Appendix for an explanation of this adjustment). This is the "school-weighted N," and it is shown for each field in Column 2 of Table A-1.3. For example, the 949 electrical engineers returning questionnaires were weighted up to 1,023 cases.
2. Different sampling ratios were initially employed in setting sample sizes in each of these thirty-seven fields. Therefore the N for each field was multiplied by its field weight to arrive at a universe estimate (see column 3 of Table A-1.3).
3. This product (the universe estimate for each detailed field) was multiplied by the reciprocal of the weight for the largest field in the sample; this field was English, with a weight of 16.7 (see column 4). This procedure determined the number of cases that were to be selected from each detailed field for inclusion in the sub-sample: it established a self-weighted sub-sample of 7,016 cases.
4. An IBM 1620 computer was employed to secure this quota. Table A-1.4 shows close correspondence between the number of cases expected per composite field and the number actually extracted.

TABLE A-1.3

COMPOSITE FIELD WEIGHTING

| Field | Weight (1) | School-Weighted N (2) | Product (3) | Product Multiplied by Reciprocal of 16.7 (.05988) Gives Field Quota (4) |
|---|---|---|---|---|
| General physical science . . | 1.1 | 170 | 187.0 | 11.20 |
| Other earth and physical science. . . . . . . . . . | 1.0 | 327 | 327.0 | 19.58 |
| Astronomy. . . . . . . . . . | 1.0 | 278 | 278.0 | 16.65 |
| Chemistry. . . . . . . . . . | 14.4 | 686 | 9,878.4 | 591.52 |
| Physics. . . . . . . . . . . | 13.5 | 611 | 8,248.5 | 493.92 |
| Geography. . . . . . . . . . | 1.8 | 659 | 1,186.2 | 71.03 |
| Geology and geophysics . . . | 3.7 | 574 | 2,123.8 | 127.17 |
| Oceanography . . . . . . . . | 1.0 | 199 | 199.0 | 11.92 |
| Metallurgy . . . . . . . . . | 1.0 | 222 | 222.0 | 13.29 |
| Meteorology. . . . . . . . . | 1.0 | 291 | 291.0 | 17.42 |
| Mathematics. . . . . . . . . | 15.2 | 588 | 8,937.6 | 535.18 |
| Other engineering. . . . . . | 10.0 | 796 | 7,960.0 | 476.64 |
| Civil engineering. . . . . . | 3.2 | 937 | 2,998.4 | 179.54 |
| Chemical engineering . . . . | 2.4 | 949 | 2,277.6 | 136.38 |
| Electrical engineering . . . | 9.3 | 1,023 | 9,513.9 | 569.69 |
| Mechanical engineering . . . | 5.0 | 1,068 | 5,340.0 | 319.76 |
| All other biology | 3.4 | 550 | 1,870.0 | 111.98 |
| Anatomy. . . . . . . . . . . | 1.4 | 279 | 390.6 | 23.39 |
| General biology. . . . . . . | 5.0 | 894 | 4,470.0 | 267.66 |
| Biochemistry . . . . . . . . | 2.9 | 674 | 1,954.6 | 117.04 |
| Botany . . . . . . . . . . . | 2.2 | 692 | 1,522.4 | 91.16 |
| Biophysics . . . . . . . . . | 1.1 | 236 | 259.6 | 15.54 |
| Genetics . . . . . . . . . . | 1.1 | 394 | 433.4 | 25.95 |
| Microbiology . . . . . . . . | 2.2 | 799 | 1,757.8 | 105.26 |
| Pathology. . . . . . . . . . | 1.2 | 167 | 200.4 | 11.99 |
| Pharmacology . . . . . . . . | 1.5 | 281 | 421.5 | 25.24 |
| Physiology . . . . . . . . . | 1.4 | 569 | 796.6 | 47.70 |
| Zoology. . . . . . . . . . . | 3.2 | 695 | 2,224.0 | 133.17 |
| Agriculture. . . . . . . . . | 5.0 | 680 | 3,400.0 | 203.59 |
| Forestry . . . . . . . . . . | 1.0 | 599 | 599.0 | 35.87 |
| Psychology . . . . . . . . . | 13.0 | 773 | 10,036.0 | 600.96 |
| Anthropology . . . . . . . . | 1.7 | 684 | 1,159.4 | 69.42 |
| Economics. . . . . . . . . . | 7.2 | 859 | 6,184.8 | 370.35 |
| Sociology. . . . . . . . . . | 4.5 | 659 | 2,965.5 | 177.57 |
| English. . . . . . . . . . . | 16.7 | 546 | 9,118.2 | 545.99 |
| History. . . . . . . . . . . | 12.1 | 614 | 7,429.4 | 444.87 |

TABLE A-1.4

NUMBER OF CASES EXPECTED AND OBSERVED IN FIVE COMPOSITE FIELDS, SELF-WEIGHTED SUB-SAMPLE

| Composite Field | Expected Number of Cases | Observed Number of Cases |
|---|---|---|
| Physical science . . . . . . . . | 1,909 | 1,901 |
| Engineering. . . . . . . . . . . | 1,683 | 1,684 |
| Life science . . . . . . . . . . | 1,215 | 1,245 |
| Behavioral science . . . . . . . | 1,218 | 1,213 |
| Humanities . . . . . . . . . . . | 991 | 985 |
| Total . . . . . . . . | 7,016 | 7,028 |

APPENDIX 2

SAMPLING INSTRUCTIONS

NATIONAL OPINION RESEARCH CENTER
University of Chicago

## SAMPLING INSTRUCTIONS

### A. Checking the Fields

This massive study of graduate student finances covers 37 different graduate fields at 131 universities; the expected sample size is about 25,000. Not all fields are taught at all schools. Enclosed is a "List of Fields Included" (green). From it you can determine which fields are scheduled for inclusion at your school. (According to 1961 information they were taught at your school.) Your first step is to check this green list for correctness. If you cannot find one of the fields at your school, check the following possibilities:

1. The field is listed under a different name in your school. Consult the enclosed list of field definitions to see how the field at your school should be classified.

2. The field is taught in your school, but at a different location. (For example, some biological science fields may be taught at medical schools which are in a different city.) If this is the case, notify us immediately on Form 1 so that arrangements can be made to sample at the other location.

3. The field may have been discontinued since 1961. If you discover this then no sampling for that field will be required. Let us know on Form 1.

4. If none of the above, then there is the possibility of an error either on our part or yours. Please call immediately for further instructions.

We would also like you to check carefully the enclosed green list to see whether the other fields not currently scheduled for this study are now taught at your school. If so, please notify us immediately and we will give you instructions as to how to proceed.

The information which we have about your school was obtained by the Office of Education from information supplied by your registrar's office in 1961. If you have any questions about how a field is defined we suggest that you refer to the sheet of "Field Definitions" (yellow) enclosed. When in doubt, check if you can, with the registrar who should be very familiar with these definitions. Otherwise, call us immediately. It may be useful to discuss the whole project with the registrar before you start, since he can help you avoid problems of definition. (You have received copies of the letter from the National Science Foundation to the president of your University, which may be helpful in any negotiations you have with the registrar's office.) In general, the registrar's advice will be better than that which we can give you since he is most familiar with his school. If, after discussing this with him, you still have some questions, or if the registrar is unable to help you immediately, do not hesitate to call us.

Here are some examples of problems which might arise and our suggested solutions:

1. Two or more fields which we have designated for sampling based on 1961 information have since been merged into only one field, and there are no longer any distinctions among students as to sub-field.

   Solution: Call us immediately or submit Form 1 via special delivery to tell us about the change and the number of graduate students in the new department. We will send you new sampling instructions for that field. Discard the sampling sheets for the separate fields which no longer exist.

2. You find just the opposite of example 1. A field was once taught as part of another field, but recently a new and separate department has been created.

   Solution: Sample the remaining students of the old department using the sampling sheets which we have provided. (Note that there will be fewer students than we expected, but this is O.K.) Call us and tell us about the new department and we will send you new sampling instructions for that field.

3. You find that it is possible to earn a graduate degree in a field at either the main campus or at a different campus in a distant city. (The most common example will be medical schools located away from the main campus.)

   Solution: We want to sample students on both campuses. Let us know about the other campus and we will decide whether you should contact these students or whether it should be handled by someone else.

In sum, your first step is to be sure you have defined each field at your school so you know precisely how to determine which students are included in the field and which are excluded.

Please keep in mind that students in different departments are sampled at different rates; therefore, the way that fields are defined is of great importance.

IF IN DOUBT, CALL US FOR INSTRUCTIONS, OR GIVE US A DETAILED DESCRIPTION OF THE SITUATION VIA FASTEST MAIL POSSIBLE.

B. Finding the Lists

Schools vary greatly in their methods of record keeping. These instructions can, therefore, be only suggestive. You will need to use your ingenuity to discover the easiest way of obtaining the lists of students from which to sample. Generally you are better off using central files if these are already sorted by fields or can easily be sorted. This means that the registrar's office or central files should be consulted first. If the registrar does not have the list available in a convenient way, the next step is to consult the Office of the Dean of the School in which the field you wish to sample is located. Finally, consult the Departmental or Committee files if no central record is kept. Remember that you may offer to reimburse the registrar's office for any expenses incurred.

You can see that you will save a great deal of the time and effort required to travel from one department to another as well as to contact department chairmen and secretaries if you use central files. However, if the central files are not arranged by field or study and if sorting them is a major project then you may be better off visiting the individual departments. Consider the alternatives and select the method which will be easiest for you.

Remember: You need a list--by field--of graduate students from which to sample.

C. Types of Lists

The list you receive from the registrar or other University official may be in one of a number of different forms. For example, it may simply be a typed list produced by some clerk in his office. Or it may be an IBM "printout" of the students' names and addresses. Or, it might be a file of cards--or even mailing labels.

In any event, you should make certain that the list shows the students grouped by field--e.g., all the biologists in one list, the astronomers in another list, etc. If this is absolutely impossible--that is, if the list mixes all the students together--then whatever list the registrar does give you must give the field of each student so that you may pick out the students you wish to sample among.

The form of the list is very important. Not only can you save yourself a lot of grief, but you can maintain the quality of the sample by thinking through in advance what form of list will be handiest to work with, and in what way you can avoid including students who are outside the population to be sampled.

D. Who Is Included

This study includes only currently registered graduate students. The students need not be attending full time. Evening or part-time students are to be included. Students taking no classes, but registered only for thesis research or writing are to be included.

Do not include the following categories of students, however:

1. Undergraduates (even if registered for one or more graduate courses).

2. Graduate students who may still be on departmental lists but who are not currently registered for any activity. If you use central files, you will probably not find any of these students. Departmental files may include students who have not finished degree requirements, but who are not now registered for any activity. If you use departmental files, and there is no way of telling whether the student is or is not registered currently, then he should be included. The principle to follow is that when in doubt as to a student's status, the student should be included in the sample.

E. "Sampling Number Sheets"--How You Sample

For each field in the study at your school, we have sent you a Sampling Number Sheet. It tells you which students to select for the sample of that field. It provides room for you to list the name and campus address of the selected students. The Sampling Number Sheet is on two-ply IBM paper. After you have entered the sampled students' names and addresses, one copy is to be kept for your records throughout the study, while the other is to be sent to us immediately for our permanent control record. We have included a manila "Business Reply" envelope for the return of this list of students in your sample.

Make sure that the copy you send to us is legible; if at all possible, type the names and addresses. Note that you have received a packet of these Sampling Number Sheets--there is one series of numbers for each field currently planned for sampling in your school. If you enter the names and addresses of sampled students by ball-point pen, take precaution that the imprint does not pass through a number of carbons onto other sheets. You may find it convenient or necessary to unstaple the pack of Sampling Number Sheets before beginning, keeping as a unit only those pages from the same field.

At some schools there will be fields in which you are to <u>take all</u> students in a field (instead of sampling among them). In such instances the Sampling Number Sheet will say "Select all students in this field."

More often, however, you will find that you are to <u>sample among</u> the list you have received from the registrar; on the Sampling Number Sheet you will notice two columns of numbers.

The numbers in the first column are merely for your convenience and ours in counting the final sample size which you select. Do not expect that you will use up all these numbers. Based on our 1961 information from the Office of Education we boosted the 1961 enrollments by approximately 50% simply to give you sufficient sampling numbers in case a field had grown rapidly at your school. So, generally, you will be using only about 2/3 of the numbers. In a very few cases you may not have sufficient numbers. In these cases contact us immediately and we will furnish you with additional sampling numbers.

Note that if the expected sample size in a field is over 30 we have continued the series of numbers on the next sheet of the IBM paper. Always be aware that the sampling numbers within a given field may continue on the next sheet of paper.

The numbers in the second column tell you which students in a field to select, if you are not to take them all. For example, if the numbers in the second column of the Sampling Number Sheet were:

| | |
|---|---|
| 1 | 2 |
| 2 | 5 |
| 3 | 8 |
| 4 | 12 |
| 5 | 15 |
| etc. | etc. |

you would simply count down your list of graduate students in that field (which you had previously obtained from the registrar's office) and select for the sample the second name on the list, the fifth name, the eighth name, the twelfth name, and so on. It makes no difference what the order of the names is on the list you are using, as long as you do not arrange them so that you select individual students of your own choosing. An alphabetical listing would be one (but not the only) example of an unbiased order from which to sample.

As another example, consider the field "mathematics," which includes both mathematics and statistics, as it is defined in this study. If you first list <u>all</u> 80 mathematics majors and continue with <u>all</u> 30 statistics majors, sampling this <u>one</u> list of 110 names will be unbiased.

If the list contains the names of students who are to be excluded from this study, make sure you do not count them as you proceed down the list. If, by any chance, there is more than one listing for the same student be sure to count him only once.

Where you can, try to simplify your job. If IBM cards are available you should have these sorted by field and have all undergraduates (and unregistered graduate students) eliminated before you start your sampling. In some cases it might even be possible to have the sampling done by IBM equipment, but generally this will best be done manually since the sample sizes for any field are not too large.

If the list given you can actually be a series of gummed labels--which IBM equipment can produce from a file of IBM cards--you can discard the labels of those who do not fall into the sample and address the questionnaires with the labels of those students who do fall in.

F. Summary

In sum then, your sampling task falls into the following steps:

1. Identify the fields scheduled for inclusion in your school and determine the best way to gain access to a list of graduate students for each field.

2. Obtain a list of all registered graduate students in each field. This can normally be found in the registrar's office, but on some campuses it may be necessary to go to individual schools or departments.

3. Sample among the students in each field, using the two-ply "Sampling Number Sheets."

4. Record the name and campus address of each respondent on these sheets, and forward one copy to NORC. Thus we will know you have completed sampling, and we will have a permanent record of all 25,000 students in the Survey 468 sample.

5. Do not hesitate to get in touch with us. Phone calls or correspondence directed to Survey 468 will reach their destination quickly.

APPENDIX 3

SELECTED TABLES,
THIRTY-SEVEN FIELDS OF STUDY

TABLE A.1

FIELD OF STUDY, CITIZENSHIP, AND STUDENT STATUS

(Per Cent)

| Field of Study | Citizenship | | | |
|---|---|---|---|---|
| | American | | Alien | N |
| | Student Status | | | |
| | Regular[a] | Special, Correspondence, Postdoctoral | | |
| **Physical Sciences** | | | | |
| General physical sciences . . | 94 | 1 | 5 | 170 |
| All other earth and physical sciences . . . . . . . . . | 84 | 3 | 13 | 327 |
| Astronomy . . . . . . . . . . . | 86 | 1 | 13 | 278 |
| Chemistry . . . . . . . . . . . | 85 | 2 | 13 | 686 |
| Physics . . . . . . . . . . . . | 82 | 3 | 15 | 611 |
| Geography . . . . . . . . . . . | 83 | 1 | 16 | 659 |
| Geology and geophysics . . . | 86 | 2 | 12 | 574 |
| Oceanography . . . . . . . . . | 85 | 1 | 14 | 199 |
| Metallurgy . . . . . . . . . . | 90 | 2 | 8 | 222 |
| Meteorology . . . . . . . . . . | 86 | 4 | 10 | 291 |
| Mathematics . . . . . . . . . . | 88 | 4 | 8 | 588 |
| **Engineering** | | | | |
| All other engineering . . . . | 79 | 3 | 18 | 796 |
| Civil engineering . . . . . . | 71 | 1 | 27 | 937 |
| Chemical engineering . . . . | 76 | 1 | 23 | 949 |
| Electrical engineering . . . | 84 | 5 | 11 | 1,023 |
| Mechanical engineering . . . | 80 | 3 | 17 | 1,068 |
| **Life Sciences** | | | | |
| All other biology . . . . . . | 79 | - | 21 | 550 |
| Anatomy . . . . . . . . . . . . | 85 | 4 | 11 | 279 |
| General biology . . . . . . . | 90 | 3 | 7 | 894 |
| Biochemistry . . . . . . . . . | 77 | 2 | 20 | 674 |
| Botany . . . . . . . . . . . . | 84 | 2 | 14 | 702 |
| Biophysics . . . . . . . . . . | 86 | 1 | 13 | 236 |
| Genetics . . . . . . . . . . . | 72 | 1 | 27 | 394 |
| Microbiology . . . . . . . . . | 83 | 1 | 16 | 799 |
| Pathology . . . . . . . . . . . | 71 | 6 | 23 | 167 |
| Pharmacology . . . . . . . . . | 81 | 1 | 18 | 281 |
| Physiology . . . . . . . . . . | 82 | 3 | 15 | 564 |
| Zoology . . . . . . . . . . . . | 90 | 1 | 9 | 695 |
| Agriculture . . . . . . . . . . | 70 | 1 | 29 | 680 |
| Forestry . . . . . . . . . . . | 79 | 2 | 19 | 599 |
| **Behavioral Sciences** | | | | |
| Psychology . . . . . . . . . . | 90 | 5 | 5 | 772 |
| Anthropology . . . . . . . . . | 89 | 1 | 10 | 684 |
| Economics . . . . . . . . . . . | 79 | 1 | 20 | 859 |
| Sociology . . . . . . . . . . . | 85 | 2 | 14 | 659 |
| **Humanities** | | | | |
| English . . . . . . . . . . . . | 94 | 2 | 4 | 546 |
| History . . . . . . . . . . . . | 94 | 2 | 4 | 614 |
| **Social Work** | | | | |
| Social work . . . . . . . . . . | 93 | 3 | 4 | 863 |

[a]The remaining tables in this Appendix are for graduate students who were American citizens enrolled for advanced degrees.

TABLE B.1

FIELD OF STUDY BY MARITAL STATUS AND AGE

(Per Cent)

| Field of Study | Marital Status: Single, Age 20-24 | 25-29 | 30-34 | 35+ | N | NA | Total N | Presently or Previously Married, Age 20-24 | 25-29 | 30-34 | 35+ | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | |
| General physical sciences | 34 | 47 | 16 | 3 | 32 | - | 32 | 8 | 34 | 29 | 29 | 126 | 1 | 127 |
| All other earth and physical sciences . . . | 44 | 44 | 8 | 4 | 89 | - | 89 | 15 | 38 | 25 | 21 | 183 | 1 | 184 |
| Astronomy . . . . . . . . | 58 | 33 | 7 | 3 | 107 | 2 | 109 | 25 | 45 | 13 | 17 | 128 | - | 128 |
| Chemistry . . . . . . . . | 52 | 39 | 6 | 3 | 259 | 3 | 262 | 23 | 45 | 18 | 14 | 315 | 2 | 317 |
| Physics . . . . . . . . . | 56 | 36 | 7 | 1 | 212 | 1 | 213 | 19 | 49 | 20 | 12 | 283 | 3 | 286 |
| Geography . . . . . . . . | 39 | 40 | 15 | 5 | 189 | 2 | 191 | 8 | 35 | 26 | 31 | 353 | 1 | 354 |
| Geology and geophysics . | 56 | 38 | 5 | 1 | 171 | 1 | 172 | 16 | 50 | 22 | 13 | 315 | 4 | 319 |
| Oceanography . . . . . . | 48 | 42 | 10 | - | 48 | - | 48 | 10 | 42 | 30 | 18 | 118 | 2 | 120 |
| Metallurgy . . . . . . . | 53 | 43 | 4 | - | 49 | 1 | 50 | 11 | 50 | 22 | 17 | 148 | 1 | 149 |
| Meteorology . . . . . . . | 47 | 45 | 5 | 3 | 60 | 2 | 62 | 6 | 32 | 35 | 27 | 187 | 1 | 188 |
| Mathematics . . . . . . . | 54 | 32 | 6 | 8 | 221 | 3 | 224 | 24 | 37 | 21 | 18 | 294 | - | 294 |
| **Engineering** | | | | | | | | | | | | | | |
| All other engineering . . | 59 | 35 | 4 | 2 | 166 | 1 | 167 | 13 | 42 | 24 | 20 | 452 | 3 | 455 |
| Civil engineering . . . . | 58 | 33 | 5 | 3 | 202 | - | 202 | 18 | 43 | 22 | 18 | 460 | 1 | 461 |
| Chemical engineering . . | 65 | 27 | 5 | 2 | 286 | 4 | 290 | 21 | 52 | 18 | 9 | 424 | 3 | 427 |
| Electrical engineering . | 53 | 36 | 7 | 4 | 255 | 5 | 260 | 14 | 40 | 28 | 18 | 586 | 6 | 592 |
| Mechanical engineering . | 47 | 40 | 9 | 3 | 240 | - | 240 | 14 | 41 | 28 | 16 | 605 | 4 | 609 |
| **Life Sciences** | | | | | | | | | | | | | | |
| All other biology . . . . | 36 | 46 | 10 | 7 | 148 | - | 148 | 19 | 39 | 26 | 17 | 280 | 2 | 282 |
| Anatomy . . . . . . . . . | 43 | 33 | 13 | 12 | 101 | - | 101 | 16 | 44 | 23 | 17 | 136 | 1 | 137 |
| General biology . . . . . | 45 | 36 | 11 | 7 | 335 | 3 | 338 | 14 | 33 | 17 | 36 | 460 | 3 | 463 |
| Biochemistry . . . . . . | 64 | 28 | 6 | 2 | 261 | - | 261 | 23 | 55 | 17 | 6 | 251 | 7 | 258 |
| Botany . . . . . . . . . | 42 | 47 | 7 | 4 | 223 | 2 | 225 | 18 | 35 | 27 | 20 | 362 | 2 | 364 |
| Biophysics . . . . . . . | 60 | 29 | 6 | 5 | 82 | 2 | 84 | 20 | 53 | 19 | 9 | 117 | 1 | 118 |
| Genetics . . . . . . . . | 49 | 41 | 8 | 1 | 94 | 3 | 97 | 13 | 46 | 23 | 17 | 183 | 2 | 185 |
| Microbiology . . . . . . | 59 | 28 | 8 | 5 | 254 | 1 | 255 | 17 | 46 | 18 | 19 | 403 | 5 | 408 |
| Pathology . . . . . . . . | 18 | 55 | 18 | 9 | 22 | - | 22 | 2 | 35 | 46 | 17 | 92 | 3 | 95 |
| Pharmacology . . . . . . | 57 | 29 | 10 | 5 | 84 | - | 84 | 13 | 48 | 24 | 15 | 142 | 2 | 144 |
| Physiology . . . . . . . | 40 | 44 | 9 | 6 | 164 | 1 | 165 | 15 | 43 | 27 | 15 | 294 | 1 | 295 |
| Zoology . . . . . . . . . | 51 | 39 | 6 | 3 | 247 | 4 | 251 | 20 | 44 | 22 | 14 | 366 | 4 | 370 |
| Agriculture . . . . . . . | 48 | 42 | 9 | 2 | 129 | 1 | 130 | 14 | 41 | 29 | 16 | 340 | 3 | 343 |
| Forestry . . . . . . . . | 46 | 42 | 8 | 3 | 125 | 3 | 128 | 14 | 38 | 27 | 21 | 338 | 7 | 345 |
| **Behavioral Sciences** | | | | | | | | | | | | | | |
| Psychology . . . . . . . | 51 | 32 | 9 | 8 | 253 | 3 | 256 | 18 | 46 | 20 | 17 | 430 | 7 | 437 |
| Anthropology . . . . . . | 38 | 38 | 12 | 11 | 240 | 9 | 249 | 21 | 31 | 22 | 26 | 356 | 3 | 359 |
| Economics . . . . . . . . | 46 | 39 | 9 | 6 | 219 | 3 | 222 | 14 | 36 | 23 | 27 | 451 | 3 | 454 |
| Sociology . . . . . . . . | 46 | 27 | 14 | 13 | 223 | 2 | 225 | 13 | 37 | 22 | 27 | 329 | - | 329 |
| **Humanities** | | | | | | | | | | | | | | |
| English . . . . . . . . . | 46 | 30 | 15 | 9 | 250 | 6 | 256 | 17 | 35 | 18 | 30 | 255 | 3 | 258 |
| History . . . . . . . . . | 45 | 29 | 17 | 9 | 273 | 2 | 275 | 18 | 42 | 20 | 20 | 287 | 4 | 291 |
| **Social Work** | | | | | | | | | | | | | | |
| Social work . . . . . . . | 36 | 34 | 12 | 18 | 325 | 2 | 327 | 12 | 26 | 13 | 48 | 458 | 8 | 466 |

TABLE B.2

FIELD OF STUDY BY SEX AND MARITAL STATUS

(Per Cent)

| Field of Study | Sex | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | | | | Female | | | | |
| | Marital Status | | N | NA | Total N | Marital Status | | N | NA | Total N |
| | Single | Married | | | | Single | Married | | | |
| **Physical Sciences** | | | | | | | | | | |
| General physical sciences | 18 | 82 | 142 | 1 | 143 | 41 | 59 | 17 | - | 17 |
| All other earth and physical sciences . . . | 32 | 68 | 260 | 1 | 261 | 54 | 46 | 13 | - | 13 |
| Astronomy . . . . . . . . | 45 | 55 | 211 | 2 | 213 | 58 | 42 | 26 | - | 26 |
| Chemistry . . . . . . . . | 42 | 58 | 508 | - | 508 | 72 | 28 | 71 | 1 | 72 |
| Physics . . . . . . . . . | 42 | 58 | 482 | - | 482 | 71 | 29 | 17 | - | 17 |
| Geography . . . . . . . . | 31 | 69 | 466 | 3 | 469 | 58 | 42 | 79 | - | 79 |
| Geology and geophysics . | 35 | 64 | 474 | 2 | 476 | 29 | 71 | 17 | - | 17 |
| Oceanography . . . . . . | 25 | 75 | 158 | 1 | 159 | 80 | 20 | 10 | - | 10 |
| Metallurgy . . . . . . . | 25 | 75 | 198 | 1 | 199 | - | 100 | 1 | - | 1 |
| Meteorology . . . . . . . | 24 | 76 | 244 | - | 244 | 50 | 50 | 6 | - | 6 |
| Mathematics . . . . . . . | 39 | 61 | 423 | - | 423 | 63 | 37 | 95 | - | 95 |
| **Engineering** | | | | | | | | | | |
| All other engineering . . | 27 | 73 | 619 | 3 | 622 | - | 100 | 3 | - | 3 |
| Civil engineering . . . . | 30 | 70 | 658 | 4 | 662 | 80 | 20 | 5 | - | 5 |
| Chemical engineering . . | 40 | 60 | 710 | 6 | 716 | 43 | 57 | 7 | - | 7 |
| Electrical engineering . | 31 | 69 | 851 | 8 | 859 | - | 100 | 1 | - | 1 |
| Mechanical engineering . | 28 | 72 | 846 | 2 | 848 | 33 | 67 | 3 | 1 | 4 |
| **Life Sciences** | | | | | | | | | | |
| All other biology . . . . | 29 | 71 | 370 | 2 | 372 | 67 | 33 | 60 | - | 60 |
| Anatomy . . . . . . . . . | 34 | 66 | 172 | - | 172 | 65 | 35 | 66 | - | 66 |
| General biology . . . . . | 36 | 64 | 404 | - | 404 | 48 | 52 | 397 | 6 | 403 |
| Biochemistry . . . . . . | 49 | 51 | 415 | 2 | 417 | 57 | 43 | 104 | - | 104 |
| Botany . . . . . . . . . | 35 | 65 | 484 | 3 | 487 | 53 | 47 | 105 | - | 105 |
| Biophysics . . . . . . . | 39 | 61 | 184 | - | 184 | 67 | 33 | 18 | 1 | 19 |
| Genetics . . . . . . . . | 30 | 70 | 225 | 1 | 226 | 53 | 47 | 57 | - | 57 |
| Microbiology . . . . . . | 34 | 66 | 424 | 1 | 425 | 46 | 54 | 239 | - | 239 |
| Pathology . . . . . . . . | 14 | 86 | 109 | 1 | 110 | 88 | 12 | 8 | - | 8 |
| Pharmacology . . . . . . | 33 | 67 | 202 | - | 202 | 65 | 35 | 26 | - | 26 |
| Physiology . . . . . . . | 30 | 70 | 376 | 3 | 379 | 61 | 39 | 84 | 1 | 85 |
| Zoology . . . . . . . . . | 36 | 64 | 473 | 4 | 477 | 54 | 46 | 148 | - | 148 |
| Agriculture . . . . . . . | 27 | 73 | 465 | - | 465 | 62 | 38 | 8 | - | 8 |
| Forestry . . . . . . . . | 27 | 73 | 469 | - | 469 | 25 | 75 | 4 | - | 4 |
| **Behavioral Sciences** | | | | | | | | | | |
| Psychology . . . . . . . | 33 | 67 | 489 | 3 | 492 | 47 | 53 | 204 | 2 | 206 |
| Anthropology . . . . . . | 39 | 61 | 380 | 1 | 381 | 45 | 55 | 228 | - | 228 |
| Economics . . . . . . . . | 32 | 68 | 619 | 2 | 621 | 39 | 61 | 57 | 1 | 58 |
| Sociology . . . . . . . . | 34 | 66 | 378 | 4 | 382 | 55 | 45 | 176 | 1 | 177 |
| **Humanities** | | | | | | | | | | |
| English . . . . . . . . . | 49 | 51 | 243 | - | 243 | 51 | 49 | 271 | 1 | 272 |
| History . . . . . . . . . | 47 | 53 | 437 | 8 | 445 | 55 | 45 | 129 | 4 | 133 |
| **Social Work** | | | | | | | | | | |
| Social work . . . . . . . | 28 | 72 | 331 | 1 | 332 | 51 | 49 | 462 | 5 | 467 |

TABLE B.3

FIELD OF STUDY BY SEX AND AGE

(Per Cent)

| Field of Study | Sex | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | | | | | | Female | | | | | | |
| | Age | | | | N | NA | Total N | Age | | | | N | NA | Total N |
| | 20-24 | 25-29 | 30-34 | 35+ | | | | 20-24 | 25-29 | 30-34 | 35+ | | | |
| **Physical Sciences** | | | | | | | | | | | | | | |
| General physical sciences | 13 | 37 | 28 | 23 | 141 | 2 | 143 | 17 | 35 | 12 | 35 | 17 | - | 17 |
| All other earth and physical sciences . . . | 24 | 40 | 20 | 16 | 260 | 1 | 261 | 38 | 38 | 15 | 8 | 13 | - | 13 |
| Astronomy . . . . . . . . | 38 | 40 | 10 | 11 | 210 | 3 | 213 | 54 | 31 | 8 | 8 | 26 | - | 26 |
| Chemistry . . . . . . . . | 34 | 45 | 14 | 8 | 504 | 4 | 508 | 53 | 26 | 4 | 17 | 70 | 2 | 72 |
| Physics . . . . . . . . . | 34 | 44 | 14 | 8 | 479 | 3 | 482 | 44 | 25 | 25 | 6 | 16 | 1 | 17 |
| Geography . . . . . . . . | 16 | 39 | 25 | 20 | 463 | 6 | 469 | 37 | 24 | 8 | 32 | 79 | - | 79 |
| Geology and geophysics . | 29 | 46 | 16 | 9 | 469 | 7 | 476 | 41 | 24 | 29 | 6 | 17 | - | 17 |
| Oceanography . . . . . . | 18 | 43 | 25 | 13 | 157 | 2 | 159 | 70 | 20 | 10 | - | 10 | - | 10 |
| Metallurgy . . . . . . . | 21 | 49 | 18 | 12 | 197 | 2 | 199 | - | - | - | 1 | 1 | - | 1 |
| Meteorology . . . . . . . | 16 | 34 | 28 | 22 | 241 | 3 | 244 | 17 | 50 | 17 | 17 | 6 | - | 6 |
| Mathematics . . . . . . . | 37 | 37 | 14 | 11 | 421 | 2 | 423 | 36 | 26 | 15 | 23 | 94 | 1 | 95 |
| **Engineering** | | | | | | | | | | | | | | |
| All other engineering . . | 26 | 41 | 19 | 15 | 616 | 6 | 622 | - | - | - | 100 | 3 | - | 3 |
| Civil engineering . . . . | 30 | 40 | 17 | 13 | 658 | 4 | 662 | 60 | 20 | 20 | - | 5 | - | 5 |
| Chemical engineering . . | 39 | 42 | 12 | 6 | 706 | 10 | 716 | 14 | 14 | 57 | 14 | 7 | - | 7 |
| Electrical engineering . | 26 | 38 | 21 | 14 | 843 | 16 | 859 | - | 100 | - | - | 1 | - | 1 |
| Mechanical engineering . | 23 | 41 | 23 | 12 | 843 | 5 | 848 | 100 | - | - | - | 3 | 1 | 4 |
| **Life Sciences** | | | | | | | | | | | | | | |
| All other biology . . . . | 24 | 43 | 21 | 12 | 369 | 3 | 372 | 27 | 33 | 18 | 22 | 60 | - | 60 |
| Anatomy . . . . . . . . . | 23 | 44 | 21 | 11 | 171 | 1 | 172 | 38 | 26 | 12 | 24 | 66 | - | 66 |
| General biology . . . . . | 29 | 45 | 15 | 12 | 400 | 4 | 404 | 26 | 24 | 15 | 36 | 399 | 4 | 403 |
| Biochemistry . . . . . . | 43 | 42 | 11 | 3 | 410 | 7 | 417 | 48 | 37 | 11 | 4 | 104 | - | 104 |
| Botany . . . . . . . . . | 25 | 41 | 22 | 12 | 480 | 7 | 487 | 37 | 33 | 9 | 21 | 105 | - | 105 |
| Biophysics . . . . . . . | 35 | 44 | 13 | 8 | 181 | 3 | 184 | 50 | 33 | 17 | - | 18 | 1 | 19 |
| Genetics . . . . . . . . | 19 | 48 | 20 | 13 | 222 | 4 | 226 | 48 | 34 | 12 | 5 | 56 | 1 | 57 |
| Microbiology . . . . . . | 28 | 42 | 18 | 12 | 421 | 4 | 425 | 42 | 34 | 8 | 16 | 237 | 2 | 239 |
| Pathology . . . . . . . . | 4 | 38 | 42 | 16 | 106 | 4 | 110 | 25 | 50 | 12 | 12 | 8 | - | 8 |
| Pharmacology . . . . . . | 28 | 42 | 20 | 10 | 200 | 2 | 202 | 38 | 27 | 8 | 27 | 26 | - | 26 |
| Physiology . . . . . . . | 21 | 45 | 23 | 10 | 375 | 4 | 379 | 36 | 35 | 8 | 20 | 85 | - | 85 |
| Zoology . . . . . . . . . | 27 | 47 | 17 | 10 | 470 | 7 | 477 | 52 | 27 | 10 | 10 | 145 | 3 | 148 |
| Agriculture . . . . . . . | 23 | 41 | 23 | 12 | 461 | 4 | 465 | 50 | 38 | 12 | - | 8 | - | 8 |
| Forestry . . . . . . . . | 23 | 39 | 22 | 16 | 459 | 10 | 469 | 50 | 25 | - | 25 | 4 | - | 4 |
| **Behavioral Sciences** | | | | | | | | | | | | | | |
| Psychology . . . . . . . | 28 | 48 | 16 | 8 | 483 | 9 | 492 | 34 | 23 | 15 | 28 | 204 | 2 | 206 |
| Anthropology . . . . . . | 26 | 39 | 20 | 15 | 377 | 4 | 381 | 32 | 24 | 16 | 28 | 220 | 8 | 228 |
| Economics . . . . . . . . | 23 | 39 | 19 | 19 | 613 | 8 | 621 | 40 | 21 | 10 | 29 | 58 | - | 58 |
| Sociology . . . . . . . . | 28 | 38 | 20 | 14 | 381 | 1 | 382 | 23 | 23 | 16 | 38 | 176 | 1 | 177 |
| **Humanities** | | | | | | | | | | | | | | |
| English . . . . . . . . . | 33 | 37 | 20 | 10 | 238 | 5 | 243 | 30 | 29 | 13 | 28 | 267 | 5 | 272 |
| History . . . . . . . . . | 30 | 37 | 20 | 13 | 437 | 8 | 445 | 34 | 28 | 18 | 20 | 131 | 2 | 133 |
| **Social Work** | | | | | | | | | | | | | | |
| Social work . . . . . . . | 14 | 37 | 20 | 29 | 326 | 6 | 332 | 28 | 23 | 8 | 41 | 460 | 7 | 467 |

TABLE B.4

FIELD OF STUDY BY SEX AND RACE

(Per Cent)

| Field of Study | Total Sample | | Sex | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male | | | | | | Female | | | | | |
| | Male | Female | Race | | | N | NA | Total N | Race | | | N | NA | Total N |
| | | | White | Negro | Other | | | | White | Negro | Other | | | |
| **Physical Sciences** | | | | | | | | | | | | | | |
| General physical sciences . . | 89 | 11 | 96 | 4 | 1 | 142 | 1 | 143 | 88 | 12 | - | 17 | - | 17 |
| All other earth and physical sciences . . . . . . . . . . . | 95 | 5 | 98 | - | 2 | 261 | - | 261 | 100 | - | - | 13 | - | 13 |
| Astronomy . . . . . . . . . . . | 89 | 11 | 99 | - | - | 209 | 4 | 213 | 100 | - | - | 26 | - | 26 |
| Chemistry . . . . . . . . . . . | 88 | 12 | 97 | 2 | 1 | 504 | 4 | 508 | 100 | - | - | 71 | 1 | 72 |
| Physics . . . . . . . . . . . . | 97 | 3 | 99 | 1 | 1 | 480 | 2 | 482 | 100 | - | - | 17 | - | 17 |
| Geography . . . . . . . . . . . | 86 | 14 | 99 | 1 | - | 459 | 10 | 469 | 92 | 6 | 1 | 79 | - | 79 |
| Geology and geophysics . . . | 97 | 3 | 99 | - | 1 | 473 | 3 | 476 | 100 | - | - | 17 | - | 17 |
| Oceanography . . . . . . . . . | 94 | 6 | 99 | 1 | 1 | 157 | 2 | 159 | 100 | - | - | 10 | - | 10 |
| Metallurgy . . . . . . . . . . | 99 | - | 100 | - | - | 197 | 2 | 199 | 100 | - | - | 1 | - | 1 |
| Meteorology . . . . . . . . . . | 98 | 2 | 96 | 2 | 2 | 243 | 1 | 244 | 100 | - | - | 6 | - | 6 |
| Mathematics . . . . . . . . . . | 82 | 18 | 98 | 1 | 1 | 421 | 2 | 423 | 92 | 5 | 2 | 94 | 1 | 95 |
| **Engineering** | | | | | | | | | | | | | | |
| All other engineering . . . . | 100 | - | 99 | - | 1 | 613 | 9 | 622 | 100 | - | - | 3 | - | 3 |
| Civil engineering . . . . . . | 99 | 1 | 99 | - | 1 | 656 | 6 | 662 | 100 | - | - | 5 | - | 5 |
| Chemical engineering . . . . | 99 | 1 | 98 | - | 2 | 710 | 6 | 716 | 100 | - | - | 7 | - | 7 |
| Electrical engineering . . . | 100 | - | 99 | - | 1 | 845 | 14 | 859 | 100 | - | - | 1 | - | 1 |
| Mechanical engineering . . . | 100 | - | 98 | - | 2 | 845 | 3 | 848 | 100 | - | - | 3 | 1 | 4 |
| **Life Sciences** | | | | | | | | | | | | | | |
| All other biology . . . . . . | 86 | 14 | 98 | - | 2 | 371 | 1 | 372 | 82 | 18 | - | 60 | - | 60 |
| Anatomy . . . . . . . . . . . . | 72 | 28 | 97 | 2 | 1 | 169 | 3 | 172 | 97 | 3 | - | 66 | - | 66 |
| General biology . . . . . . . | 50 | 50 | 94 | 4 | 2 | 402 | 2 | 404 | 95 | 3 | 2 | 399 | 4 | 403 |
| Biochemistry . . . . . . . . . | 80 | 20 | 98 | 1 | 1 | 415 | 2 | 417 | 97 | 1 | 2 | 102 | 2 | 104 |

TABLE B.4--Continued

| Field of Study | Total Sample | | Sex | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male | | | | | | Female | | | | | | | |
| | | | Race | | | N | NA | Total N | Race | | | N | NA | Total N |
| | Male | Female | White | Negro | Other | | | | White | Negro | Other | | | |
| **Life Sciences--continued** | | | | | | | | | | | | | | |
| Botany | 82 | 18 | 99 | 1 | - | 481 | 6 | 487 | 97 | - | 3 | 105 | - | 105 |
| Biophysics | 91 | 9 | 97 | 2 | 1 | 183 | 1 | 184 | 100 | - | - | 18 | 1 | 19 |
| Genetics | 80 | 20 | 98 | - | 2 | 225 | 1 | 226 | 98 | - | 2 | 56 | 1 | 57 |
| Microbiology | 64 | 36 | 96 | 2 | 2 | 423 | 2 | 425 | 97 | 1 | 2 | 238 | 1 | 239 |
| Pathology | 93 | 7 | 100 | - | - | 108 | 2 | 110 | 100 | - | - | 8 | - | 8 |
| Pharmacology | 89 | 11 | 98 | - | 2 | 200 | 2 | 202 | 92 | 4 | 4 | 26 | - | 26 |
| Physiology | 82 | 18 | 98 | 1 | 1 | 375 | 4 | 379 | 98 | 1 | 1 | 85 | - | 85 |
| Zoology | 76 | 24 | 97 | 2 | 1 | 474 | 3 | 477 | 95 | 2 | 3 | 147 | 1 | 148 |
| Agriculture | 98 | 2 | 98 | - | 1 | 464 | 1 | 465 | 100 | - | - | 8 | - | 8 |
| Forestry | 99 | 1 | 99 | - | 1 | 464 | 5 | 469 | 100 | - | - | 3 | 1 | 4 |
| **Behavioral Sciences** | | | | | | | | | | | | | | |
| Psychology | 70 | 30 | 99 | 1 | 1 | 488 | 4 | 492 | 98 | 2 | - | 205 | 1 | 206 |
| Anthropology | 63 | 37 | 98 | 1 | 1 | 379 | 2 | 381 | 96 | 4 | - | 223 | 5 | 228 |
| Economics | 91 | 9 | 98 | 1 | 1 | 613 | 8 | 621 | 100 | - | - | 58 | - | 58 |
| Sociology | 68 | 32 | 96 | 3 | 2 | 380 | 2 | 382 | 95 | 2 | 3 | 177 | - | 177 |
| **Humanities** | | | | | | | | | | | | | | |
| English | 47 | 53 | 99 | 1 | - | 241 | 2 | 243 | 100 | - | - | 270 | 2 | 272 |
| History | 77 | 23 | 98 | 2 | - | 438 | 7 | 445 | 96 | 3 | 1 | 133 | - | 133 |
| **Social Work** | | | | | | | | | | | | | | |
| Social work | 41 | 58 | 88 | 11 | 2 | 330 | 2 | 332 | 90 | 10 | - | 459 | 8 | 467 |

TABLE B.5

FIELD OF STUDY BY NUMBER OF DEPENDENTS AND AGE

(Per Cent)

| Field of Study | Number of Dependents | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | None | | | | | | | One | | | | | | | Two | | | | | | | Three or More | | | | | | |
| | Age | | | | N | NA | Total N | Age | | | | N | NA | Total N | Age | | | | N | NA | Total N | Age | | | | N | NA | Total N |
| | 20-24 | 25-29 | 30-34 | 35+ | | | | 20-24 | 25-29 | 30-34 | 35+ | | | | 20-24 | 25-29 | 30-34 | 35+ | | | | 20-24 | 25-29 | 30-34 | 35+ | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| General physical sciences | 32 | 43 | 20 | 5 | 37 | 1 | 38 | 17 | 52 | 26 | 4 | 23 | - | 23 | 6 | 55 | 24 | 15 | 33 | - | 33 | 2 | 17 | 32 | 50 | 60 | - | 60 |
| All other earth and physical sciences | 44 | 43 | 9 | 4 | 91 | - | 91 | 37 | 44 | 15 | 4 | 27 | 1 | 28 | 13 | 43 | 30 | 13 | 46 | - | 46 | 5 | 32 | 28 | 34 | 93 | - | 93 |
| Astronomy | 58 | 34 | 4 | 4 | 102 | 2 | 104 | 40 | 46 | 9 | 5 | 43 | - | 43 | 15 | 54 | 15 | 15 | 26 | - | 26 | 5 | 34 | 21 | 39 | 38 | - | 38 |
| Chemistry | 48 | 43 | 6 | 4 | 235 | 3 | 238 | 38 | 52 | 7 | 2 | 86 | - | 86 | 25 | 44 | 22 | 9 | 96 | 1 | 97 | 8 | 34 | 28 | 30 | 94 | - | 94 |
| Physics | 53 | 39 | 7 | - | 208 | 2 | 210 | 27 | 55 | 16 | 2 | 86 | - | 86 | 22 | 51 | 24 | 4 | 55 | 1 | 56 | 6 | 38 | 26 | 29 | 102 | - | 102 |
| Geography | 27 | 38 | 16 | 18 | 215 | 1 | 216 | 16 | 52 | 21 | 12 | 58 | - | 58 | 23 | 37 | 23 | 18 | 62 | - | 62 | - | 22 | 34 | 43 | 129 | 1 | 130 |
| Geology and geophysics | 45 | 45 | 8 | 2 | 179 | 1 | 180 | 26 | 56 | 13 | 4 | 68 | 2 | 70 | 23 | 55 | 19 | 3 | 62 | - | 62 | 2 | 37 | 34 | 28 | 123 | 1 | 124 |
| Oceanography | 42 | 44 | 12 | 2 | 52 | - | 52 | 19 | 54 | 19 | 8 | 26 | - | 26 | 8 | 52 | 36 | 4 | 25 | 1 | 26 | 4 | 27 | 37 | 33 | 52 | 1 | 53 |
| Metallurgy | 56 | 38 | 3 | 3 | 39 | 1 | 40 | 24 | 57 | 16 | 3 | 37 | 1 | 38 | 9 | 60 | 17 | 14 | 35 | - | 35 | 3 | 43 | 29 | 25 | 72 | - | 72 |
| Meteorology | 41 | 48 | 7 | 3 | 58 | 2 | 60 | 15 | 58 | 21 | 6 | 33 | 1 | 34 | 5 | 44 | 33 | 18 | 39 | - | 39 | 1 | 17 | 42 | 41 | 101 | - | 101 |
| Mathematics | 52 | 34 | 6 | 8 | 211 | 3 | 214 | 33 | 44 | 7 | 16 | 90 | - | 90 | 31 | 47 | 16 | 6 | 62 | - | 62 | 6 | 27 | 38 | 28 | 102 | - | 102 |
| **Engineering** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All other engineering | 54 | 35 | 5 | 6 | 155 | 1 | 156 | 35 | 44 | 15 | 6 | 95 | 1 | 96 | 17 | 59 | 18 | 6 | 125 | - | 125 | 2 | 31 | 34 | 33 | 212 | 2 | 214 |
| Civil engineering | 58 | 32 | 7 | 3 | 178 | - | 178 | 35 | 52 | 12 | 1 | 103 | 1 | 104 | 22 | 48 | 12 | 18 | 105 | - | 105 | 5 | 37 | 31 | 27 | 221 | - | 221 |
| Chemical engineering | 62 | 29 | 7 | 2 | 269 | 4 | 273 | 32 | 58 | 6 | 4 | 136 | - | 136 | 24 | 54 | 15 | 7 | 109 | - | 109 | 3 | 48 | 31 | 18 | 143 | 3 | 146 |
| Electrical engineering | 52 | 36 | 8 | 4 | 226 | 5 | 231 | 33 | 50 | 9 | 8 | 140 | 1 | 141 | 14 | 48 | 25 | 12 | 153 | 1 | 154 | 3 | 31 | 38 | 28 | 276 | 4 | 280 |
| Mechanical engineering | 52 | 37 | 7 | 4 | 223 | 1 | 224 | 26 | 52 | 17 | 4 | 111 | - | 111 | 18 | 55 | 19 | 8 | 165 | 2 | 167 | 2 | 32 | 40 | 26 | 297 | 2 | 299 |
| **Life Sciences** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| All other biology | 33 | 45 | 12 | 10 | 140 | - | 140 | 28 | 43 | 18 | 10 | 60 | - | 60 | 24 | 43 | 24 | 10 | 63 | 1 | 64 | 6 | 36 | 35 | 24 | 118 | 1 | 119 |
| Anatomy | 39 | 33 | 12 | 16 | 82 | - | 82 | 30 | 35 | 13 | 22 | 23 | - | 23 | 27 | 53 | 10 | 10 | 30 | 1 | 31 | 4 | 39 | 41 | 16 | 51 | - | 51 |
| General biology | 39 | 39 | 12 | 10 | 311 | 3 | 314 | 36 | 32 | 15 | 17 | 108 | 1 | 109 | 11 | 34 | 30 | 26 | 104 | - | 104 | - | 26 | 16 | 58 | 151 | - | 151 |
| Biochemistry | 59 | 31 | 8 | 1 | 236 | 2 | 238 | 38 | 57 | 3 | 1 | 73 | 3 | 76 | 21 | 61 | 11 | 7 | 71 | 1 | 72 | 3 | 50 | 36 | 11 | 64 | 1 | 65 |

TABLE B.5--Continued

| Field of Study | None: Age 20-24 | None: Age 25-29 | None: Age 30-34 | None: Age 35+ | None: N | None: NA | None: Total N | One: Age 20-24 | One: Age 25-29 | One: Age 30-34 | One: Age 35+ | One: N | One: NA | One: Total N | Two: Age 20-24 | Two: Age 25-29 | Two: Age 30-34 | Two: Age 35+ | Two: N | Two: NA | Two: Total N | Three or More: Age 20-24 | Three or More: Age 25-29 | Three or More: Age 30-34 | Three or More: Age 35+ | Three or More: N | Three or More: NA | Three or More: Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Life Sciences--Continued** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Botany . . . . . | 37 | 45 | 10 | 8 | 220 | - | 220 | 31 | 37 | 16 | 16 | 102 | - | 102 | 21 | 50 | 25 | 4 | 52 | - | 52 | 1 | 27 | 43 | 30 | 134 | 2 | 136 |
| Biophysics . . . | 51 | 39 | 7 | 3 | 87 | 1 | 88 | 34 | 54 | 6 | 6 | 35 | - | 35 | 27 | 50 | 15 | 8 | 26 | 1 | 27 | 8 | 41 | 35 | 16 | 37 | - | 37 |
| Genetics . . . . | 42 | 42 | 14 | 2 | 105 | 2 | 107 | 29 | 66 | 3 | 3 | 35 | 2 | 37 | 12 | 61 | 24 | 3 | 33 | - | 33 | 2 | 35 | 30 | 33 | 81 | - | 81 |
| Microbiology . . | 40 | 43 | 10 | 7 | 284 | - | 284 | 19 | 45 | 26 | 10 | 80 | 1 | 81 | 21 | 58 | 17 | 5 | 66 | - | 66 | 3 | 28 | 22 | 47 | 117 | 3 | 120 |
| Pathology . . . | 25 | 50 | 19 | 6 | 16 | - | 16 | 11 | 50 | 22 | 17 | 18 | 1 | 19 | - | 52 | 43 | 4 | 23 | - | 23 | - | 19 | 57 | 23 | 47 | 2 | 49 |
| Pharmacology . . | 40 | 36 | 15 | 8 | 84 | - | 84 | 21 | 64 | 15 | - | 33 | 1 | 34 | 24 | 44 | 29 | 3 | 34 | 1 | 35 | - | 42 | 24 | 33 | 45 | - | 45 |
| Physiology . . . | 33 | 46 | 12 | 9 | 158 | 1 | 159 | 20 | 61 | 15 | 5 | 66 | 1 | 67 | 20 | 51 | 16 | 13 | 61 | - | 61 | 3 | 30 | 44 | 23 | 111 | - | 111 |
| Zoology . . . . | 40 | 44 | 9 | 7 | 270 | 5 | 275 | 26 | 50 | 12 | 11 | 91 | - | 91 | 20 | 41 | 28 | 11 | 71 | - | 71 | 12 | 33 | 34 | 22 | 95 | 1 | 96 |
| Agriculture . . | 39 | 42 | 14 | 5 | 119 | - | 119 | 35 | 48 | 8 | 8 | 62 | 1 | 63 | 21 | 49 | 20 | 11 | 76 | 1 | 77 | 4 | 32 | 42 | 22 | 165 | 1 | 166 |
| Forestry . . . . | 42 | 43 | 9 | 6 | 127 | 5 | 132 | 27 | 45 | 19 | 9 | 75 | 1 | 76 | 17 | 56 | 18 | 9 | 66 | 1 | 67 | 3 | 25 | 38 | 34 | 154 | 2 | 156 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Psychology . . . . | 35 | 35 | 13 | 17 | 308 | 4 | 312 | 32 | 48 | 12 | 8 | 102 | 1 | 103 | 15 | 59 | 23 | 3 | 92 | 2 | 94 | 4 | 40 | 30 | 26 | 96 | 3 | 99 |
| Anthropology . . | 32 | 32 | 16 | 20 | 322 | 7 | 329 | 32 | 38 | 16 | 14 | 81 | 1 | 82 | 13 | 52 | 16 | 19 | 31 | 1 | 32 | 7 | 30 | 26 | 38 | 74 | - | 74 |
| Economics . . . | 37 | 40 | 14 | 9 | 224 | 2 | 226 | 34 | 43 | 12 | 11 | 93 | 1 | 94 | 15 | 49 | 19 | 17 | 89 | - | 89 | - | 25 | 30 | 45 | 190 | 2 | 192 |
| Sociology . . . | 35 | 31 | 15 | 19 | 231 | 1 | 232 | 22 | 41 | 17 | 20 | 76 | - | 76 | 18 | 42 | 21 | 19 | 62 | - | 62 | 2 | 24 | 36 | 38 | 90 | - | 90 |
| **Humanities** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| English . . . . | 37 | 26 | 16 | 21 | 241 | 3 | 244 | 25 | 47 | 10 | 18 | 60 | - | 60 | 15 | 56 | 5 | 23 | 39 | - | 39 | 12 | 20 | 39 | 29 | 49 | 2 | 51 |
| History . . . . | 37 | 34 | 15 | 13 | 261 | 3 | 264 | 29 | 38 | 16 | 16 | 55 | 1 | 56 | 16 | 47 | 27 | 9 | 55 | 1 | 56 | 5 | 29 | 33 | 32 | 78 | 1 | 79 |
| **Social Work** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Social work . . | 27 | 30 | 10 | 33 | 389 | 4 | 393 | 23 | 25 | 8 | 44 | 79 | 1 | 80 | 10 | 43 | 15 | 32 | 72 | - | 72 | - | 22 | 22 | 56 | 116 | 4 | 120 |

TABLE B.6

FIELD OF STUDY BY MARITAL STATUS AND NUMBER OF DEPENDENTS

(Per Cent)

| Field of Study | Marital Status: Single — Number of Dependents: None | One | Two | Three or More | N | NA | Total N | Presently or Previously Married — Number of Dependents: None | One | Two | Three or More | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | |
| General physical sciences . . . . . . | 97 | 3 | - | - | 29 | 3 | 32 | 8 | 18 | 26 | 48 | 125 | 2 | 127 |
| All other earth and physical sciences. . | 92 | 5 | 3 | - | 77 | 12 | 89 | 11 | 13 | 24 | 51 | 181 | 3 | 184 |
| Astronomy . . . . . . | 96 | - | 4 | - | 84 | 25 | 109 | 18 | 34 | 18 | 30 | 127 | 1 | 128 |
| Chemistry . . . . . . | 95 | 4 | 1 | - | 204 | 58 | 262 | 14 | 25 | 30 | 30 | 311 | 6 | 317 |
| Physics . . . . . . . | 97 | 2 | 1 | - | 172 | 41 | 213 | 15 | 29 | 20 | 36 | 282 | 4 | 286 |
| Geography . . . . . . | 98 | 2 | 1 | - | 128 | 63 | 191 | 27 | 17 | 18 | 38 | 338 | 16 | 354 |
| Geology and geophysics | 100 | - | - | - | 121 | 51 | 172 | 19 | 22 | 20 | 39 | 315 | 4 | 319 |
| Oceanography . . . . . | 100 | - | - | - | 37 | 11 | 48 | 12 | 22 | 22 | 44 | 120 | - | 120 |
| Metallurgy . . . . . . | 94 | 6 | - | - | 36 | 14 | 50 | 4 | 24 | 23 | 48 | 149 | - | 149 |
| Meteorology . . . . . | 100 | - | - | - | 47 | 15 | 62 | 7 | 18 | 21 | 54 | 187 | 1 | 188 |
| Mathematics . . . . . | 94 | 5 | - | 1 | 182 | 42 | 224 | 15 | 28 | 22 | 35 | 286 | 8 | 294 |
| **Engineering** | | | | | | | | | | | | | | |
| All other engineering. | 95 | 4 | - | 1 | 139 | 28 | 167 | 5 | 20 | 28 | 47 | 452 | 3 | 455 |
| Civil engineering . . | 93 | 6 | 1 | - | 154 | 48 | 202 | 8 | 21 | 33 | 49 | 454 | 7 | 461 |
| Chemical engineering . | 95 | 4 | 1 | - | 241 | 49 | 290 | 10 | 30 | 25 | 35 | 423 | 4 | 427 |
| Electrical engineering | 91 | 8 | - | - | 215 | 45 | 260 | 6 | 21 | 26 | 47 | 591 | 1 | 592 |
| Mechanical engineering | 92 | 7 | 1 | - | 199 | 41 | 240 | 6 | 16 | 27 | 50 | 601 | 8 | 609 |
| **Life Sciences** | | | | | | | | | | | | | | |
| All other biology . . | 96 | 4 | - | - | 104 | 44 | 148 | 14 | 20 | 23 | 43 | 279 | 3 | 282 |
| Anatomy . . . . . . . . | 93 | 7 | - | - | 59 | 42 | 101 | 21 | 15 | 24 | 40 | 128 | 9 | 137 |
| General biology . . . | 92 | 7 | 1 | - | 252 | 86 | 338 | 19 | 21 | 24 | 35 | 426 | 37 | 463 |
| Biochemistry . . . . . | 94 | 5 | 1 | - | 196 | 65 | 261 | 21 | 26 | 28 | 25 | 255 | 3 | 258 |
| Botany . . . . . . . . | 95 | 5 | - | - | 161 | 64 | 225 | 19 | 27 | 15 | 39 | 349 | 15 | 364 |
| Biophysics . . . . . . | 97 | - | 1 | 1 | 69 | 15 | 84 | 18 | 30 | 22 | 30 | 118 | - | 118 |
| Genetics . . . . . . . | 97 | 1 | - | 1 | 76 | 21 | 97 | 18 | 20 | 18 | 44 | 182 | 3 | 185 |
| Microbiology . . . . . | 97 | 3 | - | - | 155 | 100 | 255 | 34 | 19 | 17 | 30 | 396 | 12 | 408 |
| Pathology . . . . . . | 100 | - | - | - | 14 | 8 | 22 | 2 | 20 | 25 | 53 | 93 | 2 | 95 |
| Pharmacology . . . . . | 95 | 3 | 2 | - | 59 | 25 | 84 | 20 | 23 | 25 | 32 | 139 | 5 | 144 |
| Physiology . . . . . . | 98 | 2 | - | - | 111 | 54 | 165 | 17 | 23 | 21 | 39 | 287 | 8 | 295 |
| Zoology . . . . . . . | 96 | 4 | - | - | 172 | 79 | 251 | 30 | 23 | 20 | 27 | 361 | 9 | 370 |
| Agriculture . . . . . | 91 | 8 | - | 1 | 89 | 41 | 130 | 11 | 17 | 23 | 49 | 336 | 7 | 343 |
| Forestry . . . . . . . | 96 | 4 | - | - | 93 | 35 | 128 | 13 | 21 | 20 | 46 | 338 | 7 | 345 |
| **Behavioral Sciences** | | | | | | | | | | | | | | |
| Psychology . . . . . . | 97 | 2 | 1 | 1 | 183 | 73 | 256 | 32 | 24 | 22 | 23 | 425 | 12 | 437 |
| Anthropology . . . . . | 97 | 3 | - | - | 180 | 69 | 249 | 46 | 23 | 9 | 22 | 337 | 22 | 359 |
| Economics . . . . . . | 96 | 4 | - | - | 156 | 66 | 222 | 17 | 20 | 20 | 43 | 445 | 9 | 454 |
| Sociology . . . . . . | 95 | 5 | - | 1 | 150 | 75 | 225 | 29 | 22 | 20 | 29 | 310 | 19 | 329 |
| **Humanities** | | | | | | | | | | | | | | |
| English . . . . . . . . | 92 | 7 | - | 1 | 156 | 100 | 256 | 42 | 21 | 16 | 21 | 238 | 20 | 258 |
| History . . . . . . . . | 92 | 8 | 1 | - | 184 | 91 | 275 | 35 | 16 | 20 | 29 | 270 | 21 | 291 |
| **Social Work** | | | | | | | | | | | | | | |
| Social work . . . . . | 98 | 2 | - | - | 220 | 107 | 327 | 40 | 17 | 16 | 27 | 445 | 21 | 466 |

TABLE B.7

FIELD OF STUDY BY TYPE OF CURRENT RESIDENCE

(Per Cent)

| Field of Study | Type of Current Residence | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | With My Parents | University | | | Room or Apartment Rented from Private Landlord | Single-Family House | | Other | | | |
| | | Dormitory | University-Owned Apartment | Prefab or Trailer | | Rented | Owned | | | | |
| **Physical Sciences** | | | | | | | | | | | |
| General physical sciences | 7 | 4 | 5 | 2 | 29 | 14 | 33 | 6 | 159 | 1 | 160 |
| All other earth and physical sciences | 10 | 4 | 9 | 1 | 42 | 11 | 19 | 4 | 272 | 2 | 274 |
| Astronomy | 7 | 8 | 8 | 1 | 50 | 7 | 15 | 4 | 237 | 2 | 239 |
| Chemistry | 9 | 6 | 12 | 2 | 47 | 6 | 12 | 7 | 579 | 1 | 580 |
| Physics | 9 | 6 | 10 | 1 | 46 | 9 | 14 | 4 | 499 | - | 499 |
| Geography | 13 | 2 | 9 | 2 | 41 | 9 | 17 | 7 | 545 | 3 | 548 |
| Geology and geophysics | 5 | 4 | 13 | 3 | 46 | 10 | 15 | 4 | 491 | 2 | 493 |
| Oceanography | 4 | 4 | 11 | 1 | 38 | 28 | 11 | 3 | 169 | - | 169 |
| Metallurgy | 12 | 3 | 6 | 2 | 36 | 8 | 29 | 5 | 199 | 1 | 200 |
| Meteorology | 5 | 5 | 9 | - | 36 | 22 | 18 | 5 | 249 | 1 | 250 |
| Mathematics | 12 | 4 | 10 | 1 | 43 | 7 | 16 | 7 | 518 | - | 518 |
| **Engineering** | | | | | | | | | | | |
| All other engineering | 9 | 4 | 8 | - | 36 | 14 | 26 | 2 | 623 | 2 | 625 |
| Civil engineering | 9 | 3 | 7 | 2 | 40 | 13 | 22 | 5 | 663 | 4 | 667 |
| Chemical engineering | 11 | 5 | 9 | - | 47 | 10 | 15 | 2 | 717 | 6 | 723 |
| Electrical engineering | 10 | 5 | 4 | 1 | 35 | 9 | 34 | 3 | 852 | 8 | 860 |
| Mechanical engineering | 9 | 2 | 5 | 1 | 40 | 13 | 28 | 3 | 849 | 3 | 852 |

TABLE B.7--Continued

| Field of Study | Type of Current Residence | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | With My Parents | University | | | Room or Apartment Rented from Private Landlord | Single-Family House | | Other | | | |
| | | Dormitory | University-Owned Apartment | Prefab or Trailer | | Rented | Owned | | | | |
| **Life Sciences** | | | | | | | | | | | |
| All other biology | 5 | 3 | 17 | 2 | 44 | 13 | 9 | 7 | 430 | 2 | 432 |
| Anatomy | 7 | 6 | 8 | 1 | 51 | 5 | 14 | 8 | 236 | 2 | 238 |
| General biology | 14 | 9 | 7 | - | 39 | 9 | 14 | 7 | 801 | 6 | 807 |
| Biochemistry | 8 | 5 | 9 | 1 | 59 | 6 | 8 | 4 | 519 | 2 | 521 |
| Botany | 7 | 6 | 16 | 5 | 40 | 8 | 11 | 7 | 589 | 3 | 592 |
| Biophysics | 4 | 7 | 9 | - | 55 | 8 | 9 | 6 | 202 | 1 | 203 |
| Genetics | 3 | 7 | 13 | 1 | 42 | 17 | 11 | 6 | 282 | 1 | 283 |
| Microbiology | 5 | 5 | 9 | 1 | 49 | 11 | 14 | 6 | 662 | 2 | 664 |
| Pathology | 5 | 3 | 9 | - | 34 | 15 | 31 | 3 | 117 | 1 | 118 |
| Pharmacology | 10 | 7 | 11 | 1 | 49 | 5 | 12 | 5 | 227 | 1 | 228 |
| Physiology | 3 | 5 | 10 | 1 | 48 | 13 | 16 | 4 | 460 | 4 | 464 |
| Zoology | 6 | 6 | 15 | 3 | 45 | 9 | 10 | 6 | 620 | 5 | 625 |
| Agriculture | 3 | 3 | 19 | 5 | 36 | 12 | 13 | 8 | 473 | - | 473 |
| Forestry | 4 | 4 | 17 | 4 | 36 | 16 | 14 | 5 | 472 | 1 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | |
| Psychology | 8 | 3 | 9 | 2 | 52 | 9 | 12 | 4 | 694 | 4 | 698 |
| Anthropology | 5 | 3 | 7 | - | 60 | 11 | 8 | 6 | 608 | 1 | 609 |
| Economics | 6 | 4 | 12 | 3 | 42 | 9 | 20 | 5 | 675 | 4 | 679 |
| Sociology | 9 | 4 | 9 | 1 | 44 | 12 | 15 | 6 | 554 | 5 | 559 |
| **Humanities** | | | | | | | | | | | |
| English | 12 | 4 | 4 | 1 | 49 | 6 | 14 | 9 | 513 | 2 | 515 |
| History | 14 | 7 | 8 | 1 | 43 | 8 | 11 | 8 | 570 | 8 | 578 |
| **Social Work** | | | | | | | | | | | |
| Social work | 8 | 4 | 4 | 1 | 49 | 7 | 20 | 8 | 791 | 8 | 799 |

TABLE C.1a

FIELD OF STUDY AND STIPEND HOLDING

(Per Cent Holding None, One, Two, or Three Stipends[a])

| Field of Study | Number of Stipends | | | | N |
|---|---|---|---|---|---|
| | None | One | Two | Three | |
| **Physical Sciences** | | | | | |
| General physical sciences . . . . . . | 37 (160) | 62 (158) | 14 (154) | 4 (158) | 160 |
| Other earth and physical sciences . | 32 (274) | 66 (269) | 17 (273) | 2 (274) | 274 |
| Astronomy . . . . . . | 17 (239) | 83 (238) | 27 (237) | 4 (238) | 239 |
| Chemistry . . . . . . | 19 (576) | 81 (572) | 30 (571) | 8 (573) | 578 |
| Physics . . . . . . . | 24 (449) | 75 (494) | 20 (496) | 2 (497) | 499 |
| Geography . . . . . . | 42 (548) | 56 (538) | 14 (542) | 3 (546) | 548 |
| Geology and geophysics | 27 (493) | 71 (483) | 23 (489) | 4 (489) | 493 |
| Oceanography. . . . . | 11 (169) | 88 (167) | 27 (169) | 5 (169) | 169 |
| Metallurgy. . . . . . | 38 (200) | 62 (198) | 11 (198) | 2 (199) | 200 |
| Meteorology . . . . . | 21 (250) | 77 (244) | 14 (248) | 3 (246) | 250 |
| Mathematics . . . . . | 32 (516) | 67 (508) | 20 (510) | 3 (510) | 517 |
| **Engineering** | | | | | |
| All other engineering | 31 (623) | 67 (605) | 17 (615) | 3 (620) | 624 |
| Civil engineering . . | 37 (665) | 62 (657) | 16 (659) | 3 (661) | 665 |
| Chemical engineering. | 29 (723) | 69 (713) | 24 (728) | 2 (721) | 723 |
| Electrical engineering | 44 (858) | 55 (844) | 12 (845) | 3 (849) | 858 |
| Mechanical engineering | 41 (850) | 58 (839) | 15 (846) | 3 (845) | 851 |

[a]N's differ within rows because of variation in NA's.

TABLE C.1a--Continued

| Field of Study | Number of Stipends | | | | N |
|---|---|---|---|---|---|
| | None | One | Two | Three | |
| **Life Sciences** | | | | | |
| All other biology. . . | 19 (430) | 79 (421) | 21 (424) | 4 (427) | 431 |
| Anatomy. . . . . . . . | 16 (238) | 81 (233) | 21 (235) | 3 (237) | 238 |
| General biology. . . . | 28 (807) | 69 (784) | 18 (801) | 4 (805) | 807 |
| Biochemistry . . . . . | 8 (521) | 90 (514) | 22 (517) | 2 (520) | 521 |
| Botany . . . . . . . . | 11 (592) | 87 (586) | 25 (581) | 6 (591) | 592 |
| Biophysics . . . . . . | 9 (203) | 91 (202) | 28 (203) | 7 (202) | 203 |
| Genetics . . . . . . . | 11 (283) | 87 (275) | 22 (281) | 3 (283) | 283 |
| Microbiology . . . . . | 13 (662) | 85 (651) | 16 (658) | 3 (659) | 663 |
| Pathology. . . . . . . | 27 (118) | 71 (116) | 14 (116) | 3 (117) | 118 |
| Pharmacology . . . . . | 14 (228) | 84 (223) | 17 (227) | 2 (227) | 228 |
| Physiology . . . . . . | 14 (464) | 84 (456) | 24 (462) | 4 (464) | 464 |
| Zoology. . . . . . . . | 16 (625) | 83 (617) | 26 (611) | 4 (621) | 625 |
| Agriculture. . . . . . | 23 (473) | 74 (462) | 12 (471) | 2 (473) | 473 |
| Forestry . . . . . . . | 29 (473) | 71 (471) | 15 (467) | 3 (472) | 473 |
| **Behavioral Sciences** | | | | | |
| Psychology . . . . . . | 34 (698) | 65 (686) | 20 (685) | 4 (693) | 698 |
| Anthropology . . . . . | 33 (609) | 66 (604) | 20 (603) | 4 (608) | 609 |
| Economics. . . . . . . | 38 (679) | 61 (673) | 17 (676) | 3 (678) | 679 |
| Sociology . . . . . . | 37 (559) | 62 (553) | 18 (553) | 3 (556) | 559 |
| **Humanities** | | | | | |
| English. . . . . . . . | 54 (513) | 43 (500) | 10 (506) | 2 (511) | 514 |
| History. . . . . . . . | 53 (576) | 46 (570) | 9 (571) | 1 (572) | 577 |
| **Social Work** | | | | | |
| Social work . . . . . | 23 (797) | 74 (776) | 13 (789) | 2 (795) | 798 |

TABLE C.1b

FIELD OF STUDY AND TYPE OF FIRST STIPEND
(Per Cent)

| Field of Study | Type of First Stipend: Scholarship Tuition | Fellowship Tuition + Cash | Research Assistant | Teaching Assistant | N | No Sti-pends | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | |
| General physical sciences. . . . . . | 13 | 70 | 6 | 11 | 99 | 59 | 2 | 160 |
| All other earth and physical sciences . | 29 | 31 | 34 | 6 | 182 | 87 | 5 | 274 |
| Astronomy . . . . . . | 13 | 33 | 38 | 17 | 198 | 40 | 1 | 239 |
| Chemistry . . . . . . | 10 | 20 | 29 | 42 | 468 | 108 | 4 | 580 |
| Physics . . . . . . . | 11 | 24 | 38 | 27 | 373 | 121 | 5 | 499 |
| Geography . . . . . . | 17 | 20 | 13 | 49 | 306 | 232 | 10 | 548 |
| Geology and geophysics | 7 | 24 | 25 | 45 | 348 | 135 | 10 | 493 |
| Oceanography. . . . . | 5 | 29 | 59 | 7 | 148 | 19 | 2 | 169 |
| Metallurgy. . . . . . | 32 | 16 | 45 | 7 | 123 | 75 | 2 | 200 |
| Meteorology . . . . . | 22 | 27 | 47 | 5 | 192 | 52 | 6 | 250 |
| Mathematics . . . . . | 19 | 34 | 9 | 38 | 345 | 165 | 8 | 518 |
| **Engineering** | | | | | | | | |
| All other engineering | 34 | 29 | 23 | 14 | 416 | 191 | 18 | 625 |
| Civil engineering . . | 22 | 29 | 25 | 25 | 413 | 246 | 8 | 667 |
| Chemical engineering. | 18 | 39 | 27 | 16 | 501 | 212 | 10 | 723 |
| Electrical engineering | 44 | 21 | 20 | 15 | 470 | 378 | 12 | 860 |
| Mechanical engineering | 40 | 21 | 19 | 19 | 491 | 350 | 11 | 852 |
| **Life Sciences** | | | | | | | | |
| All other biology . . | 3 | 21 | 58 | 19 | 342 | 81 | 9 | 432 |
| Anatomy . . . . . . . | 5 | 53 | 12 | 31 | 194 | 39 | 5 | 238 |
| General biology . . . | 12 | 51 | 10 | 27 | 560 | 224 | 23 | 807 |
| Biochemistry. . . . . | 10 | 42 | 36 | 11 | 471 | 43 | 7 | 521 |
| Botany. . . . . . . . | 5 | 19 | 31 | 45 | 518 | 68 | 6 | 592 |
| Biophysics. . . . . . | 5 | 76 | 16 | 4 | 184 | 18 | 1 | 203 |
| Genetics. . . . . . . | 4 | 40 | 41 | 14 | 245 | 30 | 8 | 283 |
| Microbiology. . . . . | 12 | 30 | 36 | 22 | 566 | 87 | 11 | 664 |
| Pathology . . . . . . | 18 | 49 | 24 | 10 | 84 | 32 | 2 | 118 |
| Pharmacology. . . . . | 3 | 61 | 22 | 15 | 192 | 31 | 5 | 228 |
| Physiology. . . . . . | 7 | 50 | 22 | 21 | 391 | 65 | 8 | 464 |
| Zoology . . . . . . . | 4 | 24 | 24 | 48 | 520 | 97 | 8 | 625 |
| Agriculture . . . . . | 4 | 12 | 76 | 9 | 351 | 111 | 11 | 473 |
| Forestry. . . . . . . | 9 | 20 | 57 | 14 | 335 | 136 | 2 | 473 |

TABLE C.1b--Continued

| Field of Study | Type of First Stipend | | | | N | No Sti- pends | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| | Scholarship Tuition VI | Fellowship Tuition + Cash | Research Assistant | Teaching Assistant | | | | |
| Behavioral Sciences | | | | | | | | |
| Psychology. . . . . . | 10 | 34 | 35 | 22 | 452 | 234 | 12 | 698 |
| Anthropology. . . . . | 11 | 47 | 18 | 24 | 400 | 204 | 5 | 609 |
| Economics . . . . . . | 14 | 33 | 32 | 21 | 414 | 259 | 6 | 679 |
| Sociology . . . . . . | 10 | 30 | 33 | 27 | 345 | 208 | 6 | 559 |
| Humanities | | | | | | | | |
| English . . . . . . . | 23 | 22 | 6 | 49 | 223 | 279 | 13 | 515 |
| History . . . . . . . | 24 | 31 | 11 | 33 | 268 | 304 | 6 | 578 |
| Social Work | | | | | | | | |
| Social work . . . . . | 17 | 75 | 5 | 2 | 594 | 184 | 21 | 799 |

TABLE C.1c

FIELD OF STUDY AND SOURCE OF FIRST STIPEND
(Per Cent Receiving First Stipend)

| Field of Study | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | National Aeronautics and Space Administration | Office of Educ.: Nat'l Defense Education Act | Office of Educ.: Other | Public Health Service: Nat'l Inst. of Health Fellowship Program | Public Health Service: NIH Training | Other Public Health Service | Other Federal Government | Sub-total Federal Government | Private Foundations, Philanthropic Orgn. | Industry, Business Firm | Directly from School | School, Source Unknown | State or Local Government | Foreign Government | Other | Sub-total Non-Government | N | Not Applicable | No Answer | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical Sciences | | | | | | | | | | | | | | | | | | | | | | | | |
| Gen. phys. sci. . . . | 4 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85 | 1 | 0 | 9 | 2 | 2 | 0 | 1 | 15 | 99 | 59 | 2 | 160 |
| All other earth & phys. sci. . . | 5 | 16 | 13 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 4 | 43 | 3 | 29 | 16 | 5 | 3 | 0 | 1 | 57 | 182 | 87 | 5 | 274 |
| Astronomy . . . . . | 2 | 10 | 16 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 4 | 44 | 3 | 3 | 38 | 12 | * | 0 | * | 56 | 198 | 40 | 1 | 239 |
| Chemistry . . . . . | 8 | 3 | 10 | 0 | * | 2 | 0 | 4 | 2 | 2 | 2 | 34 | 3 | 10 | 42 | 8 | 2 | 0 | 1 | 66 | 468 | 108 | 4 | 580 |
| Physics . . . . . . | 14 | 8 | 17 | 0 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 49 | 3 | 8 | 31 | 7 | 2 | 0 | 1 | 51 | 373 | 121 | 5 | 499 |
| Geography . . . . . | 0 | 2 | 3 | 0 | 1 | 7 | 0 | 0 | 0 | * | 1 | 12 | 9 | 0 | 69 | 5 | 3 | 0 | 2 | 88 | 306 | 232 | 10 | 548 |
| Geology and geophysics. . . . | 1 | 3 | 12 | * | * | 5 | 0 | 0 | * | 0 | 2 | 24 | 4 | 6 | 54 | 8 | 3 | 0 | * | 76 | 348 | 135 | 10 | 493 |
| Oceanography. . . . | 6 | 12 | 11 | 0 | 0 | 7 | 0 | 1 | 2 | 3 | 18 | 59 | 5 | 3 | 18 | 10 | 4 | 0 | 1 | 41 | 148 | 19 | 2 | 169 |
| Metallurgy. . . . . | 15 | 8 | 5 | 0 | 7 | 2 | 0 | 0 | 0 | 0 | 2 | 40 | 5 | 28 | 25 | 1 | 2 | 0 | 0 | 60 | 123 | 75 | 2 | 200 |
| Meteorology . . . . | 1 | 35 | 10 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 19 | 71 | 6 | 2 | 13 | 5 | 1 | 0 | 2 | 29 | 192 | 52 | 6 | 250 |
| Mathematics . . . . | 1 | 3 | 22 | * | * | 5 | 0 | 0 | 1 | 0 | 2 | 35 | 3 | 13 | 37 | 7 | 4 | * | * | 65 | 345 | 165 | 8 | 518 |
| Engineering | | | | | | | | | | | | | | | | | | | | | | | | |
| All other engineering . . . | 6 | 10 | 6 | * | 2 | 2 | 0 | 1 | 1 | 1 | 4 | 35 | 5 | 29 | 23 | 7 | 1 | 0 | 1 | 65 | 416 | 191 | 18 | 625 |
| Civil engineering . | * | 6 | 7 | * | 0 | 3 | 0 | 1 | 3 | 5 | 3 | 28 | 5 | 12 | 38 | 7 | 9 | * | 1 | 72 | 413 | 246 | 8 | 667 |
| Chemical engineering . . . | 4 | 1 | 12 | 0 | 3 | 7 | 1 | 1 | * | 1 | 3 | 33 | 5 | 28 | 26 | 7 | 2 | 0 | * | 67 | 501 | 212 | 10 | 723 |
| Electrical engineering . . . | * | 7 | 6 | * | 4 | 1 | 0 | 0 | * | 0 | 3 | 22 | 2 | 41 | 26 | 6 | 1 | 0 | 2 | 78 | 470 | 378 | 12 | 860 |
| Mechanical engineering . . . | 3 | 8 | 6 | * | 6 | 2 | 0 | 0 | 0 | 0 | 2 | 27 | 5 | 33 | 30 | 3 | 1 | 0 | * | 73 | 491 | 350 | 11 | 852 |

TABLE C.1c--Continued

(Per Cent Receiving First Stipend)

| Field of Study | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | Nat'l Aeronautics and Space Adm. | Office of Educ.: Nat'l. Defense Education Act | Office of Educ.: Other | Public Health Serv.: Nat'l Inst. of Health Fellowship Program | Public Health Serv.: NIH Training | Other Public Health Service | Other Federal Government | Sub-total Federal Government | Private Foundations Philanthropic Orgn. | Industry, Business Firm | Directly from School | School, Source Unknown | State or Local Government | Foreign Government | Other | Sub-total Non-Government | N | Not Applicable | No Answer | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Life Sciences** | | | | | | | | | | | | | | | | | | | | | | | | |
| All other biology | 1 | * | 12 | * | 0 | 5 | 0 | 4 | 6 | 3 | 3 | 35 | 4 | 4 | 34 | 16 | 6 | 0 | 2 | 65 | 342 | 81 | 9 | 432 |
| Anatomy. . . . . | 0 | 1 | 3 | 1 | 0 | 1 | 1 | 9 | 0 | 2 | 3 | 65 | 3 | 0 | 21 | 8 | 3 | 0 | 1 | 35 | 194 | 39 | 5 | 238 |
| General biology. | 1 | 0 | 38 | 0 | 0 | 1 | * | 5 | 8 | 2 | 1 | 56 | 4 | 2 | 27 | 6 | 5 | 0 | 1 | 44 | 560 | 224 | 23 | 807 |
| Biochemistry . . | 1 | * | 7 | * | 0 | 2 | * | 18 | 25 | 8 | 1 | 63 | 3 | 2 | 13 | 11 | 7 | * | 1 | 37 | 471 | 43 | 7 | 521 |
| Botany . . . . . | 1 | 0 | 18 | 0 | * | 4 | 0 | 2 | 1 | 2 | 2 | 30 | 2 | 2 | 46 | 14 | 5 | 0 | * | 69 | 518 | 68 | 6 | 592 |
| Biophysics . . . | 9 | 2 | 12 | 0 | 1 | 0 | 0 | 20 | 30 | 7 | 1 | 80 | 2 | 0 | 12 | 5 | 1 | 0 | 0 | 20 | 184 | 18 | 1 | 203 |
| Genetics . . . . | 2 | 0 | 15 | 0 | 0 | 4 | * | 4 | 17 | 2 | 3 | 47 | 3 | 3 | 31 | 11 | 4 | * | 1 | 53 | 245 | 30 | 8 | 283 |
| Microbioloby . . | * | 2 | 18 | * | 0 | 1 | * | 8 | 21 | 3 | 2 | 55 | 3 | 1 | 23 | 8 | 9 | 0 | * | 45 | 566 | 87 | 11 | 644 |
| Pathology. . . . | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 20 | 30 | 5 | 8 | 68 | 6 | 0 | 14 | 6 | 2 | 0 | 4 | 32 | 84 | 32 | 2 | 118 |
| Pharmacology . . | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 16 | 49 | 3 | 0 | 71 | 5 | 2 | 16 | 5 | 2 | 0 | 0 | 29 | 192 | 31 | 5 | 228 |
| Physiology . . . | 2 | 2 | 3 | 1 | 1 | 2 | 0 | 17 | 29 | 3 | 2 | 61 | 3 | 1 | 24 | 9 | 2 | 0 | 1 | 39 | 391 | 65 | 8 | 464 |
| Zoology. . . . . | 1 | * | 11 | * | 0 | 5 | 0 | 5 | 8 | 3 | 1 | 34 | 2 | * | 51 | 10 | 2 | 0 | 1 | 66 | 520 | 97 | 8 | 625 |
| Agriculture. . . | 2 | 1 | 2 | 0 | 0 | 5 | 0 | 1 | 3 | 2 | 5 | 20 | 3 | 6 | 44 | 21 | 5 | * | 1 | 80 | 351 | 111 | 11 | 473 |
| Forestry . . . . . | 2 | 0 | 7 | 0 | 0 | 2 | 0 | 1 | 1 | * | 11 | 25 | 7 | 8 | 33 | 13 | 12 | * | 1 | 75 | 335 | 136 | 2 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | | | | | | |
| Psychology . . . | * | 1 | 6 | 3 | * | 2 | 2 | 13 | 11 | 6 | 4 | 47 | 3 | 1 | 33 | 8 | 6 | 0 | 2 | 53 | 452 | 234 | 12 | 698 |
| Anthropology . . | * | * | 9 | * | 0 | 15 | 1 | 8 | 2 | 1 | 1 | 37 | 7 | 1 | 43 | 6 | 3 | 0 | 3 | 63 | 400 | 204 | 5 | 609 |
| Economics. . . . | 0 | 2 | 3 | * | * | 10 | 0 | 0 | 0 | * | 6 | 21 | 11 | 3 | 49 | 8 | 7 | * | 2 | 79 | 414 | 259 | 6 | 679 |
| Sociology. . . . | * | 2 | 1 | 0 | 0 | 10 | 1 | 5 | 5 | 3 | 2 | 28 | 6 | 2 | 48 | 9 | 6 | 0 | 1 | 72 | 345 | 208 | 6 | 559 |
| **Humanities** | | | | | | | | | | | | | | | | | | | | | | | | |
| English. . . . . | 0 | * | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 5 | 1 | 69 | 4 | 10 | 0 | 2 | 91 | 223 | 279 | 13 | 515 |
| History. . . . . | 0 | 1 | 0 | 0 | 0 | 7 | 0 | * | 0 | 0 | 1 | 10 | 13 | 2 | 54 | 9 | 8 | * | 4 | 90 | 268 | 304 | 6 | 578 |
| **Social Work** | | | | | | | | | | | | | | | | | | | | | | | | |
| Social work. . . | 0 | * | * | 3 | 0 | * | 2 | 7 | 13 | 2 | 7 | 35 | 16 | 1 | 5 | 3 | 36 | 1 | 4 | 65 | 594 | 184 | 21 | 799 |

*Less than one-half of 1 per cent.

TABLE C.2

TOTAL INCOME BY PER CENT OF TOTAL INCOME FROM STIPENDS

| Total Income | 1. General Physical Sciences | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . | * | | | | | | | * | | 2 |
| $1,000 - $1,499 . | * | | | | | | * | | | 3 |
| $1,500 - $2,499 . | * | | | | | | * | * | | 5 |
| $2,500 - $2,999 . | * | | | | | * | | * | * | 5 |
| $3,000 - $4,999 . | 21 | 10 | | 3 | 3 | 3 | 3 | | 55 | 29 |
| $5,000 - $7,999 . | 32 | 16 | 16 | 9 | 7 | | 5 | 5 | 11 | 76 |
| $8,000 - $9,999 . | 41 | 23 | 5 | 14 | 5 | 5 | | | 9 | 22 |
| $10,000-$10,999 . | | * | | | | | | | | 1 |
| $11,000 and up. . | * | * | | | | | | | | 13 |
| | 2. All Other Earth and Physical Sciences | | | | | | | | | |
| $0. . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . | * | | | | | | | | * | 4 |
| $1,000 - $1,499 . | * | | | | | | | | | 2 |
| $1,500 - $2,499 . | * | | | * | * | * | | | * | 8 |
| $2,500 - $2,999 . | * | | | | | * | | | * | 10 |
| $3,000 - $4,999 . | 6 | | | | 3 | 15 | 8 | 13 | 55 | 71 |
| $5,000 - $7,999 . | 26 | 8 | 11 | 6 | 14 | 21 | 5 | 3 | 8 | 66 |
| $8,000 - $9,999 . | 41 | 18 | 21 | 6 | 12 | 3 | | | | 34 |
| $10,000-$10,999 . | 52 | 35 | 10 | | | | | | 3 | 31 |
| $11,000 and up. . | 57 | 31 | 5 | 2 | 2 | | | | 2 | 42 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 3. Astronomy | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . . | * | | | | | | | | | 3 |
| $1,000 - $1,499 . . . | * | | | | | | | | | 1 |
| $1,500 - $2,499 . . . | * | | | | * | * | * | * | * | 14 |
| $2,500 - $2,999 . . . | * | | * | | * | * | * | * | * | 16 |
| $3,000 - $4,999 . . . | 6 | 2 | 1 | | 7 | 34 | 16 | 7 | 27 | 98 |
| $5,000 - $7,999 . . . | 8 | 4 | 8 | | 38 | 34 | 6 | | 2 | 50 |
| $8,000 - $9,999 . . . | 26 | 4 | 13 | 17 | 26 | 13 | | | | 23 |
| $10,000-$10,999 . . . | * | * | * | | * | | | | | 7 |
| $11,000 and up. . . . | 52 | 33 | 7 | | 4 | 4 | | | | 27 |
| | 4. Chemistry | | | | | | | | | |
| $0. . . . . . . . . . | * | | | | | | | | | 2 |
| Less than $100 to $999. . . . . . . | * | | | | | | | | | 3 |
| $1,000 - $1,499 . . . | * | | | | | | | | | 5 |
| $1,500 - $2,499 . . . | 8 | | | 2 | 8 | 5 | 10 | 8 | 60 | 63 |
| $2,500 - $2,999 . . . | | | | | | 7 | 4 | 19 | 70 | 54 |
| $3,000 - $4,999 . . . | 4 | * | 1 | 1 | 6 | 17 | 18 | 13 | 38 | 201 |
| $5,000 - $7,999 . . . | 28 | 15 | 3 | 2 | 26 | 19 | 3 | 3 | 1 | 149 |
| $8,000 - $9,999 . . . | 44 | 16 | 5 | 9 | 25 | 2 | | | | 57 |
| $10,000-$10,999 . . . | * | * | | | * | | | | * | 13 |
| $11,000 and up. . . . | 48 | 24 | 12 | 8 | | 4 | | | 4 | 25 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 5. Physics | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | | | | | | 2 |
| $1,000 - $1,499 . . | * | | | | | | | | | 5 |
| $1,500 - $2,499 . . | 28 | 3 | 3 | | 5 | 5 | | 13 | 44 | 39 |
| $2,500 - $2,999 . . | 5 | | 3 | | 8 | 15 | 10 | 18 | 41 | 39 |
| $3,000 - $4,999 . . | 5 | 1 | | 2 | 6 | 21 | 16 | 10 | 39 | 156 |
| $5,000 - $7,999 . . | 17 | 6 | 3 | | 30 | 27 | 7 | 6 | 4 | 115 |
| $8,000 - $9,999 . . | 47 | 20 | 4 | 3 | 19 | 3 | | 3 | 1 | 70 |
| $10,000-$10,999 . . | 52 | 24 | | 5 | 10 | | 5 | | 5 | 21 |
| $11,000 and up. . . | 60 | 29 | 2 | 2 | 4 | 2 | | | | 45 |
| | 6. Geography | | | | | | | | | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | * | | | | * | 15 |
| $1,000 - $1,499 . . | 32 | | 5 | | 5 | 9 | 41 | | 9 | 22 |
| $1,500 - $2,499 . . | 34 | | 1 | 4 | 8 | 6 | 8 | 8 | 30 | 71 |
| $2,500 - $2,999 . . | 21 | 3 | 3 | 3 | | 9 | 12 | 21 | 29 | 34 |
| $3,000 - $4,999 . . | 29 | 5 | 1 | 4 | 9 | 22 | 11 | 7 | 12 | 112 |
| $5,000 - $7,999 ... | 43 | 8 | 4 | 11 | 19 | 6 | 2 | 2 | 4 | 170 |
| $8,000 - $9,999 . . | 53 | 9 | 5 | 9 | 19 | | 2 | 3 | | 64 |
| $10,000-$10,999 . . | * | * | | | | | | | | 7 |
| $11,000 and up. . . | 73 | 23 | 4 | | | | | | | 48 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 7. Geology and Geophysics — Per Cent of Total Income from Stipends | | | | | | | | | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 7 |
| $1,000 - $1,499 . . | * | | | | | * | | | * | 17 |
| $1,500 - $2,499 . . | 31 | | 12 | 2 | 2 | 8 | 8 | 8 | 27 | 48 |
| $2,500 - $2,999 . . | 8 | | | 5 | 15 | 8 | 5 | 15 | 45 | 40 |
| $3,000 - $4,999 . . | 19 | 1 | 2 | 5 | 14 | 24 | 16 | 7 | 13 | 174 |
| $5,000 - $7,999 . . | 24 | 4 | 2 | 9 | 35 | 19 | 1 | 2 | 5 | 127 |
| $8,000 - $9,999 . . | 42 | 2 | 12 | 10 | 25 | 4 | 2 | 2 | | 48 |
| $10,000-$10,999 . . | * | | | | * | | | | | 8 |
| $11,000 and up. . . | 62 | 14 | 19 | | 5 | | | | | 21 |
| | 8. Oceanography | | | | | | | | | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | 1 | | | | | | | | | 1 |
| $1,000 - $1,499 . . | | | | | | | | | | |
| $1,500 - $2,499 . . | 1 | | * | | | | | * | * | 13 |
| $2,500 - $2,999 . . | | | | | | * | | * | * | 7 |
| $3,000 - $4,999 . . | 6 | 3 | 2 | | 6 | 21 | 12 | 9 | 41 | 66 |
| $5,000 - $7,999 . . | 8 | 4 | 4 | 6 | 32 | 28 | 4 | 6 | 8 | 50 |
| $8,000 - $9,999 . . | 20 | 15 | | | 45 | 15 | | 5 | | 20 |
| $10,000-$10,999 . . | * | | | | * | | | | | 3 |
| $11,000 and up... . | * | * | * | | | | | | * | 7 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 9. Metallurgy | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 5 |
| $1,000 - $1,499 . . | * | | | | | | | | * | 2 |
| $1,500 - $2,499 . . | * | | | | | | | | * | 2 |
| $2,500 - $2,999 . . | * | | | | | * | | | * | 5 |
| $3,000 - $4,999 . . | 13 | | 3 | | | 16 | 11 | | 47 | 38 |
| $5,000 - $7,999 . . | 39 | 13 | 2 | | 11 | 13 | 7 | | 9 | 54 |
| $8,000 - $9,999 . . | 41 | 34 | 2 | | 16 | 4 | 2 | | 2 | 56 |
| $10,000-$10,999 . . | * | | | * | | * | | | | 14 |
| $11,000 and up. . . | 59 | 36 | | | | | 5 | | | 22 |
| | 10. Meteorology | | | | | | | | | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | | | | | * | | | | | 1 |
| $1,000 - $1,499 . . | * | | * | | | | | | | 2 |
| $1,500 - $2,499 . . | * | | | | | | | | * | 6 |
| $2,500 - $2,999 . . | * | | * | | | * | * | * | * | 13 |
| $3,000 - $4,999 . . | 10 | 4 | 4 | 6 | 4 | 18 | 10 | 6 | 39 | 51 |
| $5,000 - $7,999 . . . | 15 | 4 | 8 | 11 | 11 | 19 | 10 | 8 | 14 | 84 |
| $8,000 - $9,999 . . | 27 | 18 | 29 | 7 | 9 | 2 | 2 | | 7 | 45 |
| $10,000-$10,999 . . | * | * | * | * | * | | | * | | 17 |
| $11,000 and up. . . | 48 | 26 | 17 | 4 | | 4 | | | | 23 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 11. Mathematics | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . . | * | | | | | | | | | 2 |
| Less than $100 to $999 . . . . . | * | | * | | | | | | * | 11 |
| $1,000 - $1,499 . . | * | | * | * | * | * | | | * | 13 |
| $1,500 - $2,499 . . | 31 | | 2 | 2 | 4 | 7 | 7 | 2 | 44 | 45 |
| $2,500 - $2,999 . . | 11 | 3 | 3 | 3 | 3 | 5 | 16 | 11 | 46 | 37 |
| $3,000 - $4,999 . . | 16 | 2 | 1 | 1 | 5 | 20 | 11 | 9 | 34 | 143 |
| $5,000 - $7,999 . . | 35 | 15 | 7 | 2 | 17 | 12 | 3 | 3 | 6 | 144 |
| $8,000 - $9,999 . . | 53 | 30 | 5 | 2 | 5 | 2 | | | 2 | 40 |
| $10,000-$10,999 . . | * | * | | * | * | * | | | | 18 |
| $11,000 and up. . . | 53 | 33 | 2 | 3 | 2 | 2 | | | 5 | 58 |
| | 12. All Other Engineering | | | | | | | | | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 4 |
| $1,000 - $1,499 . . | | | | | | | | | * | 2 |
| $1,500 - $2,499 . . | 29 | | 4 | 4 | 4 | 21 | 11 | 7 | 21 | 28 |
| $2,500 - $2,999 . . | * | * | | | * | * | * | * | * | 18 |
| $3,000 - $4,999 . . | 4 | 2 | 1 | 4 | 7 | 27 | 22 | 9 | 24 | 113 |
| $5,000 - $7,999 . . | 22 | 14 | 8 | 3 | 18 | 16 | 5 | 7 | 8 | 158 |
| $8,000 - $9,999 . . | 38 | 29 | 11 | 3 | 9 | 6 | 1 | 1 | 2 | 125 |
| $10,000-$10,999 . . | 44 | 35 | 6 | 6 | | | 4 | 2 | 2 | 48 |
| $11,000 and up. . . | 56 | 32 | 5 | 2 | 1 | | | | 3 | 121 |

*Less than one-half of 1 per cent.

TABLE C-2--Continued

| Total Income | 13. Civil Engineering | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . | * | | | | | | | | | 1 |
| $1,000 - $1,499 . | * | | | | | | | * | * | 6 |
| $1,500 - $2,499 . | 30 | | 4 | | 22 | 7 | | | 37 | 27 |
| $2,500 - $2,999 . | 12 | | | | 34 | 3 | 28 | 3 | 19 | 32 |
| $3,000 - $4,999 . | 17 | | 1 | 2 | 6 | 28 | 15 | 7 | 22 | 144 |
| $5,000 - $7,999 . | 35 | 7 | 4 | 4 | 17 | 15 | 5 | 4 | 9 | 195 |
| $8,000 - $9,999 . | 50 | 22 | 6 | 5 | 10 | 2 | 2 | 1 | 3 | 125 |
| $10,000-$10,999 . | 59 | 20 | 2 | 7 | 5 | 2 | 2 | 2 | | 41 |
| $11,000 and up. . | 56 | 17 | 1 | 2 | 12 | 4 | 2 | 4 | 1 | 82 |
| | 14. Chemical Engineering | | | | | | | | | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . | * | | | * | | | | | * | 8 |
| $1,000 - $1,499 . | * | | | | | * | | * | | 8 |
| $1,500 - $2,499 . | 29 | | | | 5 | 5 | 10 | 10 | 43 | 21 |
| $2,500 - $2,999 . | 3 | 3 | 3 | 3 | 23 | 3 | 13 | 3 | 43 | 30 |
| $3,000 - $4,999 . | 2 | 2 | * | | 6 | 32 | 16 | 6 | 35 | 220 |
| $5,000 - $7,999 . | 28 | 10 | 5 | 2 | 25 | 19 | 6 | 1 | 4 | 208 |
| $8,000 - $9,999 . | 54 | 17 | | 3 | 17 | 3 | 2 | | 4 | 112 |
| $10,000-$10,999 . | 58 | 26 | | 5 | 5 | 3 | | | 3 | 38 |
| $11,000 and up. . | 66 | 30 | | 1 | 1 | 1 | | | | 67 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 15. Electrical Engineering | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0. . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | | * | | | | 5 |
| $1,000 - $1,499 . . | * | | | | | | | | | 2 |
| $1,500 - $2,499 . . | 33 | 4 | 4 | | 7 | 15 | 4 | 7 | 26 | 27 |
| $2,500 - $2,999 . . | 30 | | | 3 | | 6 | | 17 | 43 | 30 |
| $3,000 - $4,999 . . | 20 | 2 | 1 | 4 | 8 | 31 | 10 | 6 | 18 | 130 |
| $5,000 - $7,999 . . | 40 | 10 | 3 | 3 | 11 | 19 | 3 | 2 | 7 | 174 |
| $8,000 - $9,999 . . | 48 | 35 | 2 | 1 | 6 | 2 | 1 | 1 | 3 | 216 |
| $10,000-$10,999 . . | 56 | 36 | | 4 | 3 | 1 | | | | 75 |
| $11,000 and up. . . | 60 | 33 | 3 | 2 | 2 | 1 | | 1 | 1 | 186 |
| | 16. Mechanical Engineering | | | | | | | | | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 5 |
| $1,000 - $1,499 . . | * | | | | | | | | * | 9 |
| $1,500 - $2,499 . . | 43 | 3 | | 3 | 3 | 13 | 13 | 7 | 13 | 30 |
| $2,500 - $2,999 . . | | | 10 | | 10 | 20 | 15 | 10 | 35 | 20 |
| $3,000 - $4,999 . . | 12 | 1 | 3 | 1 | 12 | 35 | 7 | 4 | 24 | 147 |
| $5,000 - $7,999 . . | 39 | 15 | 4 | 4 | 10 | 15 | 3 | 3 | 7 | 193 |
| $8,000 - $9,999 . . | 49 | 33 | 6 | 1 | 6 | 2 | * | * | 1 | 202 |
| $10,000-$10,999 . . | 44 | 33 | 7 | 6 | 1 | | 1 | | 7 | 70 |
| $11,000 and up. . . | 58 | 36 | 2 | 1 | 2 | 1 | | | 1 | 154 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 17. All Other Biology | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | * | | | * | | | 3 |
| $1,000 - $1,499 . . | * | | | | | * | * | | * | 7 |
| $1,500 - $2,499 . . | 23 | | | 3 | 3 | | 3 | 17 | 50 | 30 |
| $2,500 - $2,999 . . | 5 | | 2 | | | 5 | 11 | 11 | 67 | 57 |
| $3,000 - $4,999 . . | 11 | | 1 | 1 | 9 | 16 | 14 | 10 | 39 | 161 |
| $5,000 - $7,999 . . | 24 | 2 | 2 | 4 | 33 | 18 | 2 | 6 | 9 | 136 |
| $8,000 - $9,999 . . | 36 | 4 | | 4 | 36 | 12 | 4 | 4 | | 25 |
| $10,000-$10,999 . . | * | | | | * | | | | | 2 |
| $11,000 and up . . | * | * | | * | * | | | | | 8 |
| | 18. Anatomy | | | | | | | | | |
| $0 . . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 3 |
| $1,000 - $1,499 . . | * | * | | | | * | | * | * | 9 |
| $1,500 - $2,499 . . | 32 | | 4 | | 7 | 11 | 7 | 4 | 36 | 28 |
| $2,500 - $2,999 . . | * | | | | | * | * | * | * | 14 |
| $3,000 - $4,999 . . | 7 | | 1 | 2 | 2 | 10 | 10 | 11 | 56 | 82 |
| $5,000 - $7,999 . . | 8 | 10 | 2 | 5 | 17 | 21 | 10 | 8 | 21 | 63 |
| $8,000 - $9,999 . . | 20 | | 5 | 5 | 45 | 10 | | | 15 | 20 |
| $10,000-$10,999 . . | * | | | | * | * | | | | 7 |
| $11,000 and up . . | * | * | * | | | * | | | | 11 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19. General Biology | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | * | * | 13 |
| $1,000 - $1,499 . . | * | * | * | * | | * | | * | | 16 |
| $1,500 - $2,499 . . | 40 | 2 | | 1 | 3 | 5 | | 24 | 25 | 88 |
| $2,500 - $2,999 . . | 7 | | | | 12 | 2 | 10 | 19 | 50 | 42 |
| $3,000 - $4,999 . . | 19 | 3 | 1 | 4 | 1 | 7 | 14 | 17 | 35 | 284 |
| $5,000 - $7,999 . . | 29 | 9 | 7 | 3 | 11 | 2 | 3 | 3 | 13 | 227 |
| $8,000 - $9,999 . . | 46 | 6 | 6 | 4 | 25 | 8 | | | 4 | 48 |
| $10,000-$10,999 . . | * | * | * | | * | | | | | 17 |
| $11,000 and up . . | 30 | 30 | 11 | 3 | 24 | 2 | | | | 63 |
| | 20. Biochemistry | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | | | | | * | | | | * | 4 |
| $1,000 - $1,499 . . | * | | | * | | * | | | | 7 |
| $1,500 - $2,499 . . | 7 | | 7 | | 12 | 5 | | | 68 | 41 |
| $2,500 - $2,999 . . | 2 | 3 | 9 | | 2 | | 3 | 8 | 74 | 66 |
| $3,000 - $4,999 . . | 5 | 4 | 1 | * | 5 | 15 | 13 | 13 | 43 | 218 |
| $5,000 - $7,999 . . | 13 | 5 | 3 | 2 | 35 | 24 | 8 | 2 | 8 | 136 |
| $8,000 - $9,999 . . | 11 | 6 | 3 | 3 | 54 | 11 | | | 11 | 35 |
| $10,000-$10,999 . . | | | | * | | * | | | | 2 |
| $11,000 and up . . | * | * | * | * | | * | * | | | 10 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 21. Botany | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0. . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | * | | | | | * | 10 |
| $1,000 - $1,499 . . | * | | | | | | * | * | * | 18 |
| $1,500 - $2,499 . . | 26 | 2 | 2 | 10 | 3 | 8 | 2 | 2 | 47 | 62 |
| $2,500 - $2,999 . . | 2 | | 1 | | 2 | 3 | 6 | 19 | 66 | 98 |
| $3,000 - $4,999 . . | 5 | | 6 | | 11 | 21 | 12 | 8 | 38 | 202 |
| $5,000 - $7,999 . . | 12 | 10 | 5 | 7 | 41 | 18 | 1 | 1 | 5 | 142 |
| $8,000 - $9,999 . . | 12 | 12 | 4 | 12 | 44 | 12 | | 4 | | 25 |
| $10,000-$10,999 . . | * | * | | * | | | | | | 6 |
| $11,000 and up . . | 32 | 12 | 16 | 4 | 4 | 24 | 8 | | | 25 |
| | 22. Biophysics | | | | | | | | | |
| $0 . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | * | | | | | | | | | 1 |
| $1,000 - $1,499 . . | | | | | | | | | | |
| $1,500 - $2,499 . . | * | | * | | * | * | | * | * | 13 |
| $2,500 - $2,999 . . | * | | | | | | * | * | * | 11 |
| $3,000 - $4,999 . . | 1 | | | | | 7 | 17 | 16 | 59 | 76 |
| $5,000 - $7,999 . . | 10 | 5 | - | 2 | 10 | 41 | 10 | 5 | 19 | 63 |
| $8,000 - $9,999 . . | 10 | | 10 | 10 | 40 | 25 | | 5 | | 20 |
| $10,000-$10,999 . . | * | | * | | * | * | | | | 6 |
| $11,000 and up . . | * | * | | * | * | * | | * | | 13 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 23. Genetics | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . . | | | | | | | | | | |
| Less than $100 to $999 . . . . . | | | | | | | | | | |
| $1,000 - $1,499 . . | * | | | | | * | | | | 2 |
| $1,500 - $2,499 . . | * | | | | * | * | * | * | * | 18 |
| $2,500 - $2,999 . . | | | | | 3 | | 3 | 10 | 83 | 30 |
| $3,000 - $4,999 . . | 4 | | 3 | 2 | 4 | 18 | 9 | 14 | 48 | 111 |
| $5,000 - $7,999 . . | 10 | 5 | 3 | 5 | 28 | 26 | 10 | 3 | 9 | 86 |
| $8,000 - $9,999 . . | * | | | | * | | * | | | 17 |
| $10,000-$10,999 . . | | * | * | * | * | | | * | | 7 |
| $11,000 and up . . | * | * | * | * | | | | | | 11 |
| | 24. Microbiology | | | | | | | | | |
| $0 . . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | * | | | | 6 |
| $1,000 - $1,499 . . | | | | | | | | | * | 3 |
| $1,500 - $2,499 . . | 9 | 1 | 5 | 5 | 8 | 17 | 3 | 5 | 47 | 78 |
| $2,500 - $2,999 . . | | | 4 | 6 | | 27 | 7 | 7 | 48 | 98 |
| $3,000 - $4,999 . . | 11 | 2 | 8 | 3 | 11 | 17 | 11 | 11 | 27 | 186 |
| $5,000 - $7,999 . . | 16 | 6 | 4 | 6 | 36 | 13 | 2 | 1 | 16 | 210 |
| $8,000 - $9,999 . . | 16 | 2 | 41 | 8 | 20 | 4 | 2 | | 6 | 49 |
| $10,000-$10,999 . . | * | * | | * | * | * | | | | 12 |
| $11,000 and up . . | * | * | * | | | * | | | | 18 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 25. Pathology | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | | | | | | | | | | |
| $1,000 - $1,499 . . | | | | | | | | | | |
| $1,500 - $2,499 . . | * | | | | * | | | | | 2 |
| $2,500 - $2,999 . . | | | | | | * | | * | | 2 |
| $3,000 - $4,999 . . | * | * | | | | | * | * | * | 10 |
| $5,000 - $7,999 . . | 17 | 6 | 4 | 4 | 10 | 8 | 2 | 10 | 40 | 52 |
| $8,000 - $9,999 . . | 31 | 19 | 8 | | 12 | 4 | 4 | 8 | 15 | 26 |
| $10,000-$10,999 . . | * | | | | * | | | | * | 4 |
| $11,000 and up . . | 50 | 15 | | | 10 | 20 | 5 | | | 20 |
| | 26. Pharmacology | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | | * | 2 |
| $1,000 - $1,499 . . | | | | * | | | | | * | 2 |
| $1,500 - $2,499 . . | * | | | * | | | | | * | 13 |
| $2,500 - $2,999 . . | | | | | * | * | * | * | * | 17 |
| $3,000 - $4,999 . . | 4 | 1 | 1 | | 5 | 12 | 11 | 14 | 51 | 74 |
| $5,000 - $7,999 . . | 14 | | 1 | 5 | 22 | 28 | 3 | 4 | 22 | 76 |
| $8,000 - $9,999 . . | 15 | 5 | 5 | 10 | 50 | 5 | | | 10 | 20 |
| $10,000-$10,999 . . | * | | | | * | | | | | 5 |
| $11,000 and up . . | * | * | * | * | * | * | | | | 16 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 27. Physiology | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0 . . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | | | | | | * | | | | 1 |
| $1,000 - $1,499 . . | * | | | | * | | * | | * | 5 |
| $1,500 - $2,499 . . | 25 | | 2 | | 10 | 5 | 10 | 5 | 43 | 40 |
| $2,500 - $2,999 . . | 3 | | 3 | | 5 | 8 | 8 | 8 | 65 | 37 |
| $3,000 - $4,999 . . | 6 | | 1 | 1 | 7 | 16 | 11 | 10 | 49 | 158 |
| $5,000 - $7,999 . . | 12 | 4 | 7 | 4 | 27 | 17 | 3 | 5 | 20 | 128 |
| $8,000 - $9,999 . . | 23 | 5 | 5 | 7 | 30 | 8 | 7 | 3 | 13 | 61 |
| $10,000-$10,999 . . | * | | | | * | * | | | * | 10 |
| $11,000 and up . . | 45 | 14 | 9 | 14 | 9 | 5 | 5 | | | 22 |
| | 28. Zoology | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 4 |
| Less than $100 to $999 . . . . . | * | | | | | | | * | * | 9 |
| $1,000 - $1,499 . . | * | | | | * | | | * | | 14 |
| $1,500 - $2,499 . . | 9 | | 1 | 2 | 2 | 10 | 9 | 11 | 56 | 90 |
| $2,500 - $2,999 . . | 2 | | | | 4 | 6 | 15 | 22 | 51 | 81 |
| $3,000 - $4,999 . . | 9 | | 2 | 2 | 8 | 22 | 15 | 13 | 30 | 163 |
| $5,000 - $7,999 . . | 20 | 2 | 6 | 7 | 40 | 13 | 4 | 3 | 5 | 189 |
| $8,000 - $9,999 . . | 17 | 10 | 5 | 7 | 44 | 12 | 2 | 2 | | 41 |
| $10,000-$10,999 . . | * | * | * | | * | | * | | | 8 |
| $11,000 and up . . | 35 | 9 | 17 | 22 | 17 | | | | | 23 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 29. Agriculture | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0 . . . . . . . . . | * | | | | | | | | | 2 |
| Less than $100 to $999 . . . . . | | | | | | | | | * | 2 |
| $1,000 - $1,499 . . | * | | | | | * | * | | * | 8 |
| $1,500 - $2,499 . . | 29 | | | | 2 | 4 | 6 | 10 | 48 | 48 |
| $2,500 - $2,999 . . | 5 | | | | 2 | 7 | 7 | 25 | 54 | 44 |
| $3,000 - $4,999 . . | 6 | 3 | | 1 | 5 | 23 | 14 | 16 | 33 | 168 |
| $5,000 - $7,999 . . | 34 | 3 | 2 | 1 | 35 | 10 | 6 | 4 | 6 | 145 |
| $8,000 - $9,999 . . | 57 | 3 | | 8 | 24 | | | 3 | 5 | 37 |
| $10,000-$10,999 . . | * | * | | * | | | | | | 5 |
| $11,000 and up . . | * | * | | | * | | | | * | 11 |
| | 30. Forestry | | | | | | | | | |
| $0 . . . . . . . . . | * | | | | | | | | | 2 |
| Less than $100 to $999 . . . . . | | | | | * | | | | * | 4 |
| $1,000 - $1,499 . . | * | | | | * | | * | | * | 8 |
| $1,500 - $2,499 . . | 37 | 2 | 2 | | 5 | 11 | 13 | 5 | 27 | 63 |
| $2,500 - $2,999 . . | 14 | 2 | 2 | 6 | 8 | 12 | 10 | 12 | 33 | 49 |
| $3,000 - $4,999 . . | 13 | 2 | 2 | 3 | 15 | 29 | 10 | 10 | 15 | 136 |
| $5,000 - $7,999 . . | 33 | 3 | 7 | 9 | 34 | 8 | 2 | | 3 | 148 |
| $8,000 - $9,999 . . | 61 | 10 | 5 | 15 | 5 | 2 | 2 | | | 41 |
| $10,000-$10,999 . . | * | * | * | | * | | | | * | 8 |
| $11,000 and up . . | * | * | * | | | | | | | 11 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31. Psychology | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | * | * | * | * | | * | 16 |
| $1,000 - $1,499 . . | * | | * | * | * | | | * | * | 16 |
| $1,500 - $2,499 . . | 35 | 1 | 1 | 2 | 6 | 7 | 12 | 9 | 26 | 88 |
| $2,500 - $2,999 . . | 20 | | 2 | 2 | 7 | 5 | 9 | 22 | 33 | 55 |
| $3,000 - $4,999 . . | 20 | 2 | 3 | 2 | 7 | 24 | 12 | 13 | 19 | 194 |
| $5,000 - $7,999 . . | 38 | 5 | 1 | 5 | 25 | 15 | 2 | 3 | 7 | 198 |
| $8,000 - $9,999 . . | 40 | 5 | 2 | 9 | 35 | 5 | 2 | 2 | | 55 |
| $10,000-$10,999 . . | 57 | 10 | 10 | 14 | 10 | | | | | 21 |
| $11,000 and up . . | 52 | 20 | 10 | 10 | 4 | 2 | 2 | | | 50 |
| | 32. Anthropology | | | | | | | | | |
| $0 . . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | * | | * | | | * | 14 |
| $1,000 - $1,499 . . | * | | | | * | * | | | 4 | 13 |
| $1,500 - $2,499 . . | 40 | 1 | 1 | 1 | 13 | 3 | 1 | 6 | 31 | 67 |
| $2,500 - $2,999 . . | 16 | 2 | | 4 | 9 | 14 | 27 | 11 | 18 | 56 |
| $3,000 - $4,999 . . | 23 | 5 | 1 | 5 | 8 | 14 | 7 | 10 | 28 | 199 |
| $5,000 - $7,999 . . | 33 | 5 | 5 | 7 | 23 | 15 | 1 | 5 | 5 | 149 |
| $8,000 - $9,999 . . | 37 | | 10 | 10 | 33 | 7 | 2 | | | 46 |
| $10,000-$10,999 . . | * | | * | * | * | | | | | 8 |
| $11,000 and up . . | 51 | 12 | 10 | 12 | 6 | 2 | | | 6 | 49 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | 33. Economics | | | | | | | | | |
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 4 |
| Less than $100 to $999 . . . . . | * | * | | | | | | | | 3 |
| $1,000 - $1,499 . . | * | | * | | | | | | | 13 |
| $1,500 - $2,499 . . | 33 | 1 | 4 | | 9 | 9 | 12 | 4 | 27 | 67 |
| $2,500 - $2,999 . . | 11 | 2 | 2 | 2 | 9 | 19 | 15 | 13 | 26 | 53 |
| $3,000 - $4,999 . . | 23 | 1 | 2 | 2 | 7 | 16 | 15 | 11 | 24 | 198 |
| $5,000 - $7,999 . . | 38 | 9 | 2 | 9 | 18 | 10 | 2 | 5 | 8 | 173 |
| $8,000 - $9,999 . . | 50 | 21 | 3 | 5 | 13 | 4 | 3 | | 1 | 76 |
| $10,000-$10,999 . . | 62 | 10 | 14 | | 7 | 7 | | | | 29 |
| $11,000 and up . . | 77 | 12 | 2 | 4 | 4 | 2 | | | | 52 |
| | 34. Sociology | | | | | | | | | |
| $0 . . . . . . . . | * | | | | | | | | | 1 |
| Less than $100 to $999 . . . . . | * | | | | | | | | | 5 |
| $1,000 - $1,499 . . | * | | | * | | * | * | | * | 14 |
| $1,500 - $2,499 . . | 27 | | 5 | 9 | 2 | 11 | 9 | 11 | 25 | 55 |
| $2,500 - $2,999 . . | 15 | 2 | | 5 | 2 | 7 | 12 | 12 | 44 | 41 |
| $3,000 - $4,999 . . | 22 | 2 | 3 | 5 | 8 | 16 | 12 | 11 | 21 | 169 |
| $5,000 - $7,999 . . | 43 | 5 | 3 | 3 | 25 | 10 | 3 | 2 | 6 | 157 |
| $8,000 - $9,999 . . | 44 | 7 | 5 | 7 | 23 | 9 | 2 | 2 | | 43 |
| $10,000-$10,999 . . | * | * | * | * | * | | * | | | 17 |
| $11,000 and up . . | 67 | 18 | 10 | 2 | | | | 2 | | 49 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 35. English | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0 . . . . . . . . . | * | | | | | | | | | 3 |
| Less than $100 to $999 . . . . . | * | | | | * | * | | | * | 14 |
| $1,000 - $1,499 . . | 80 | 5 | | 5 | | | | 5 | 5 | 20 |
| $1,500 - $2,499 . . | 40 | 4 | 4 | 4 | 3 | 9 | 3 | 3 | 32 | 78 |
| $2,500 - $2,999 . . | 30 | | 3 | | 3 | 12 | 9 | 15 | 27 | 33 |
| $3,000 - $4,999 . . | 38 | 5 | 2 | 2 | 2 | 21 | 9 | 9 | 12 | 133 |
| $5,000 - $7,999 . . | 64 | 10 | 4 | 1 | 13 | 6 | 1 | 1 | | 134 |
| $8,000 - $9,999 . . | 68 | 14 | 4 | 4 | 11 | | | | | 28 |
| $10,000-$10,999 . . | * | * | | | | | | | | 11 |
| $11,000 and up . . | 72 | 7 | 9 | 9 | 2 | | | | | 54 |
| | 36. History | | | | | | | | | |
| $0 . . . . . . . . . | * | | | | | | | | | 5 |
| Less than $100 to $999 . . . . . | 78 | | | 4 | 4 | | | | 15 | 27 |
| $1,000 - $1,499 . . | 74 | | 3 | | | 11 | 3 | 6 | 3 | 35 |
| $1,500 - $2,499 . . | 45 | 1 | 5 | | 5 | 9 | 9 | 11 | 15 | 85 |
| $2,500 - $2,999 . . | 24 | | 7 | 2 | | 15 | 9 | 22 | 22 | 46 |
| $3,000 - $4,999 . . | 36 | 3 | 4 | 2 | 14 | 14 | 3 | 8 | 15 | 118 |
| $5,000 - $7,999 . . | 60 | 8 | 7 | 8 | 11 | 4 | 1 | | 1 | 167 |
| $8,000 - $9,999 . . | 53 | 16 | 2 | 7 | 20 | 2 | | | | 45 |
| $10,000-$10,999 . . | * | * | | | | | | | | 10 |
| $11,000 and up . . | 82 | 11 | 4 | 4 | | | | | | 28 |

*Less than one-half of 1 per cent.

TABLE C.2--Continued

| Total Income | 37. Social Work | | | | | | | | | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent of Total Income from Stipends | | | | | | | | | |
| | 0 | 1-9 | 10-19 | 20-29 | 30-49 | 50-69 | 70-79 | 80-89 | 90+ | |
| $0 . . . . . . . . . | * | | | | | | | | | 3 |
| Less than $100 to $999. . . . . . . | * | | | | * | * | * | | * | 16 |
| $1,000 - $1,499 . . | * | | | * | | * | * | | * | 11 |
| $1,500 - $2,499 . . | 14 | 2 | 3 | 2 | 7 | 4 | 10 | 12 | 44 | 90 |
| $2,500 - $2,999 . . | 10 | 1 | 1 | 1 | 4 | 25 | 15 | 12 | 30 | 73 |
| $3,000 - $4,999 . . | 12 | 1 | | | 7 | 26 | 19 | 13 | 22 | 205 |
| $5,000 - $7,999 . . | 23 | 11 | 5 | 8 | 26 | 10 | 6 | 1 | 10 | 186 |
| $8,000 - $9,999 . . | 27 | 6 | 10 | 27 | 13 | 11 | 2 | 1 | 2 | 84 |
| $10,000-$10,999 . . | 38 | 10 | | | 43 | | | 5 | 5 | 21 |
| $11,000 and up . . | 50 | 16 | 16 | 7 | 7 | 3 | | 1 | | 100 |

*Less than one-half of 1 per cent.

TABLE C.3

FIELD OF STUDY BY ENROLLMENT STATUS AND TOTAL ACADEMIC EXPENSES

(Per Cent)

| Field of Study | Enrollment Status | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Full Time | | | | | | | | | Part Time | | | | | | | | |
| | Total Academic Costs | | | | | | N | NA | Total N | Total Academic Costs | | | | | | N | NA | Total N |
| | $0 | ≥$100 to $299 | $300 to $499 | $500 to $899 | $900 to $1,599 | $1,600 and Up | | | | $0 | ≥$100 to $299 | $300 to $499 | $500 to $899 | $900 to $1,599 | $1,600 and Up | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | | | | |
| General physical sciences | - | 28 | 47 | 12 | 1 | 11 | 72 | 1 | 73 | 1 | 71 | 18 | 8 | 1 | - | 73 | 1 | 74 |
| All other earth and physical sciences . . . | 1 | 10 | 16 | 32 | 30 | 11 | 146 | - | 146 | - | 38 | 19 | 37 | 5 | - | 115 | 5 | 120 |
| Astronomy . . . . . . . . . | - | 14 | 14 | 18 | 32 | 22 | 169 | - | 169 | 2 | 24 | 27 | 26 | 18 | 3 | 62 | - | 62 |
| Chemistry . . . . . . . . . | - | 16 | 25 | 28 | 22 | 8 | 355 | 2 | 357 | 1 | 47 | 27 | 16 | 6 | 2 | 201 | 4 | 205 |
| Physics . . . . . . . . . . | 1 | 18 | 26 | 26 | 19 | 12 | 300 | 3 | 303 | 1 | 43 | 26 | 20 | 10 | 1 | 176 | 4 | 180 |
| Geography . . . . . . . . . | - | 10 | 25 | 38 | 22 | 5 | 316 | - | 316 | - | 44 | 31 | 15 | 8 | 1 | 202 | 5 | 207 |
| Geology and geophysics. . | - | 15 | 22 | 31 | 20 | 12 | 350 | 1 | 351 | - | 33 | 31 | 22 | 13 | 1 | 128 | 1 | 129 |
| Oceanography. . . . . . . . | - | 22 | 33 | 30 | 10 | 5 | 127 | 1 | 128 | - | 35 | 21 | 32 | 9 | 3 | 34 | - | 34 |
| Metallurgy. . . . . . . . . | - | 11 | 14 | 38 | 26 | 11 | 73 | - | 73 | 2 | 24 | 27 | 37 | 9 | 1 | 120 | 2 | 122 |
| Meteorology . . . . . . . . | 2 | 13 | 18 | 33 | 26 | 9 | 175 | 7 | 182 | - | 22 | 21 | 33 | 19 | 5 | 58 | - | 58 |
| Mathematics . . . . . . . . | - | 16 | 31 | 20 | 21 | 12 | 250 | 2 | 252 | 2 | 44 | 30 | 16 | 9 | - | 244 | 4 | 248 |
| **Engineering** | | | | | | | | | | | | | | | | | | |
| All other engineering . . | 1 | 12 | 14 | 16 | 36 | 22 | 309 | 2 | 311 | 2 | 36 | 28 | 25 | 7 | 2 | 296 | 5 | 301 |
| Civil engineering . . . . | * | 8 | 24 | 20 | 30 | 17 | 303 | 4 | 307 | 2 | 35 | 27 | 25 | 11 | 1 | 342 | 8 | 350 |
| Chemical engineering. . . | - | 13 | 17 | 23 | 33 | 13 | 409 | 3 | 412 | 2 | 46 | 23 | 21 | 7 | 2 | 292 | 7 | 299 |
| Electrical engineering. . | 3 | 13 | 18 | 21 | 26 | 20 | 257 | 1 | 258 | 4 | 39 | 28 | 20 | 8 | 1 | 562 | 12 | 574 |
| Mechanical engineering. . | 1 | 8 | 22 | 22 | 29 | 17 | 296 | 3 | 299 | 1 | 43 | 24 | 25 | 5 | 1 | 515 | 17 | 532 |
| **Life Sciences** | | | | | | | | | | | | | | | | | | |
| All other biology . . . . | * | 15 | 33 | 33 | 14 | 5 | 303 | 1 | 304 | 1 | 37 | 28 | 22 | 11 | 2 | 111 | - | 111 |
| Anatomy . . . . . . . . . . | 1 | 15 | 21 | 29 | 26 | 8 | 182 | 1 | 183 | 2 | 32 | 36 | 18 | 9 | 2 | 44 | - | 44 |
| General biology . . . . . | - | 22 | 22 | 27 | 18 | 10 | 466 | 3 | 469 | 2 | 54 | 23 | 13 | 7 | 1 | 300 | 3 | 303 |
| Biochemistry. . . . . . . | * | 11 | 21 | 29 | 24 | 14 | 458 | - | 458 | 4 | 31 | 27 | 12 | 19 | 6 | 48 | 1 | 49 |

*Less than one-half of 1 per cent.

TABLE C.3--Continued

| Field of Study | Full Time: Total Academic Costs: $0 | ≥$100 to $299 | $300 to $499 | $500 to $899 | $900 to $1,599 | $1,600 and Up | N | NA | Total N | Part Time: Total Academic Costs: $0 | ≥$100 to $299 | $300 to $499 | $500 to $899 | $900 to $1,599 | $1,600 and Up | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Life Sciences--Continued | | | | | | | | | | | | | | | | | | |
| Botany | * | 18 | 30 | 32 | 18 | 3 | 394 | 3 | 397 | - | 28 | 31 | 34 | 6 | 1 | 176 | - | 176 |
| Biophysics | - | 14 | 21 | 20 | 28 | 17 | 174 | - | 174 | - | 21 | 11 | 26 | 26 | 16 | 19 | - | 19 |
| Genetics | - | 18 | 20 | 40 | 18 | 4 | 202 | - | 202 | - | 42 | 21 | 26 | 8 | 3 | 62 | 1 | 63 |
| Microbiology | - | 27 | 19 | 27 | 15 | 13 | 526 | 1 | 527 | - | 41 | 31 | 21 | 7 | 1 | 116 | 1 | 117 |
| Pathology | 3 | 16 | 29 | 33 | 14 | 4 | 69 | 1 | 70 | 11 | 41 | 28 | 9 | 7 | 4 | 46 | - | 46 |
| Pharmacology | - | 10 | 19 | 31 | 33 | 8 | 189 | - | 189 | - | 39 | 30 | 9 | 15 | 6 | 33 | 1 | 34 |
| Physiology | 1 | 15 | 20 | 32 | 24 | 7 | 363 | - | 363 | - | 39 | 18 | 28 | 14 | 1 | 79 | 1 | 80 |
| Zoology | - | 18 | 31 | 31 | 16 | 4 | 425 | - | 425 | - | 31 | 30 | 27 | 8 | 3 | 181 | 3 | 184 |
| Agriculture | 1 | 22 | 40 | 29 | 7 | 2 | 310 | 2 | 312 | 1 | 52 | 30 | 13 | 3 | - | 141 | 1 | 142 |
| Forestry | - | 23 | 36 | 24 | 14 | 3 | 345 | 2 | 347 | 2 | 55 | 22 | 19 | 1 | 1 | 107 | 1 | 108 |
| Behavioral Sciences | | | | | | | | | | | | | | | | | | |
| Psychology | - | 12 | 25 | 30 | 26 | 7 | 464 | 2 | 466 | * | 44 | 26 | 20 | 9 | * | 210 | 1 | 211 |
| Anthropology | - | 11 | 19 | 24 | 27 | 19 | 403 | 2 | 405 | - | 37 | 21 | 25 | 13 | 4 | 175 | 5 | 180 |
| Economics | * | 21 | 22 | 24 | 21 | 11 | 391 | 4 | 395 | 2 | 40 | 32 | 18 | 6 | 2 | 257 | 6 | 263 |
| Sociology | - | 12 | 24 | 30 | 22 | 11 | 298 | 1 | 299 | - | 41 | 29 | 16 | 10 | 4 | 240 | 7 | 247 |
| Humanities | | | | | | | | | | | | | | | | | | |
| English | - | 19 | 27 | 27 | 19 | 8 | 211 | 1 | 212 | * | 48 | 31 | 15 | 4 | 1 | 268 | 4 | 272 |
| History | * | 9 | 30 | 26 | 26 | 9 | 327 | 7 | 334 | 1 | 44 | 32 | 16 | 5 | 2 | 220 | 4 | 224 |
| Social Work | | | | | | | | | | | | | | | | | | |
| Social work | - | 7 | 23 | 20 | 42 | 9 | 617 | 6 | 623 | 1 | 55 | 19 | 17 | 7 | 1 | 138 | 2 | 140 |

TABLE C.4

FIELD OF STUDY BY AMOUNT OF FIRST STIPEND

(Per Cent)

| Field of Study | Amount of First Stipend | | | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $0 | $100 to $999 | $1,000 to $1,499 | $1,500 to $2,499 | $2,500 to $2,999 | $3,000 to $4,999 | $5,000 to $7,999 | $8,000 to $9,999 | $10,000 to $10,999 | $11,000 and Up | | | |
| **Physical Sciences** | | | | | | | | | | | | | |
| General physical sciences. . . . . . | 36 | 25 | 8 | 10 | 1 | 13 | 6 | 1 | - | - | 157 | 3 | 160 |
| All other earth and physical sciences . | 31 | 19 | 4 | 14 | 9 | 19 | 3 | - | * | * | 268 | 6 | 274 |
| Astronomy . . . . . . | 17 | 13 | 6 | 31 | 10 | 21 | 1 | - | - | - | 239 | - | 239 |
| Chemistry . . . . . . | 18 | 15 | 6 | 29 | 12 | 19 | * | - | * | * | 572 | 8 | 580 |
| Physics . . . . . . . | 24 | 12 | 5 | 21 | 13 | 23 | 1 | * | * | - | 492 | 7 | 499 |
| Geography . . . . . . | 42 | 15 | 8 | 23 | 6 | 4 | 2 | - | - | - | 543 | 5 | 548 |
| Geology and geophysics | 27 | 12 | 11 | 27 | 9 | 13 | 1 | - | - | - | 491 | 2 | 493 |
| Oceanography. . . . . | 11 | 11 | 2 | 32 | 8 | 29 | 5 | - | 1 | - | 167 | 2 | 169 |
| Metallurgy. . . . . . | 38 | 21 | 3 | 8 | 4 | 21 | 5 | * | * | - | 198 | 2 | 200 |
| Meteorology . . . . . | 20 | 20 | 9 | 12 | 8 | 22 | 7 | 2 | - | - | 242 | 8 | 250 |
| Mathematics . . . . . | 31 | 21 | 5 | 19 | 8 | 13 | 1 | * | - | 1 | 511 | 7 | 518 |
| **Engineering** | | | | | | | | | | | | | |
| All other engineering | 31 | 22 | 9 | 11 | 8 | 15 | 3 | 1 | * | 1 | 618 | 7 | 625 |
| Civil engineering . . | 37 | 13 | 8 | 16 | 9 | 13 | 3 | 1 | * | * | 654 | 13 | 667 |
| Chemical engineering. | 29 | 15 | 4 | 20 | 13 | 18 | 1 | 1 | - | - | 713 | 10 | 723 |
| Electrical engineering | 45 | 24 | 3 | 10 | 7 | 9 | 2 | 1 | * | * | 845 | 15 | 860 |
| Mechanical engineering | 41 | 24 | 4 | 15 | 5 | 8 | 2 | * | * | * | 831 | 21 | 852 |
| **Life Sciences** | | | | | | | | | | | | | |
| All other biology . . | 18 | 7 | 6 | 22 | 21 | 24 | 2 | - | - | - | 429 | 3 | 432 |
| Anatomy . . . . . . . | 17 | 11 | 5 | 18 | 10 | 30 | 8 | 1 | - | - | 237 | 1 | 238 |
| General biology . . . | 27 | 15 | 5 | 13 | 9 | 28 | 2 | - | - | - | 799 | 8 | 807 |
| Biochemistry. . . . . | 8 | 14 | 3 | 23 | 18 | 29 | 3 | 1 | 1 | - | 520 | 1 | 521 |
| Botany. . . . . . . . | 11 | 15 | 5 | 33 | 20 | 14 | 2 | * | * | - | 589 | 3 | 592 |
| Biophysics. . . . . . | 9 | 3 | 4 | 15 | 14 | 46 | 7 | 1 | * | - | 203 | - | 203 |
| Genetics. . . . . . . | 10 | 9 | 4 | 20 | 23 | 30 | 5 | - | - | - | 282 | 1 | 283 |
| Microbiology. . . . . | 13 | 18 | 6 | 30 | 15 | 15 | 3 | * | - | - | 661 | 3 | 664 |
| Pathology . . . . . . | 27 | 16 | 2 | 3 | 3 | 17 | 26 | 3 | 3 | - | 117 | 1 | 118 |
| Pharmacology. . . . . | 13 | 7 | 5 | 17 | 14 | 36 | 8 | * | - | - | 226 | 2 | 228 |
| Physiology. . . . . . | 14 | 9 | 7 | 21 | 13 | 27 | 8 | 3 | - | - | 463 | 1 | 464 |
| Zoology . . . . . . . | 15 | 11 | 9 | 37 | 12 | 14 | 2 | - | - | - | 622 | 3 | 625 |
| Agriculture . . . . . | 24 | 6 | 3 | 24 | 18 | 23 | 2 | * | - | * | 470 | 3 | 473 |
| Forestry. . . . . . . | 29 | 14 | 9 | 28 | 12 | 8 | 1 | - | * | - | 470 | 3 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | |
| Psychology. . . . . . | 33 | 11 | 7 | 24 | 10 | 13 | 1 | * | - | - | 694 | 4 | 698 |
| Anthropology. . . . . | 33 | 13 | 5 | 24 | 8 | 15 | 1 | - | - | * | 602 | 7 | 609 |
| Economics . . . . . . | 38 | 10 | 6 | 21 | 11 | 11 | 2 | - | - | - | 668 | 11 | 679 |
| Sociology . . . . . . | 36 | 13 | 7 | 21 | 8 | 13 | 2 | * | - | - | 551 | 8 | 559 |
| **Humanities** | | | | | | | | | | | | | |
| English . . . . . . . | 54 | 13 | 4 | 17 | 7 | 5 | * | - | - | - | 508 | 7 | 515 |
| History . . . . . . . | 53 | 14 | 5 | 18 | 4 | 6 | - | - | - | - | 566 | 12 | 578 |
| **Social Work** | | | | | | | | | | | | | |
| Social work . . . . . | 23 | 11 | 6 | 29 | 10 | 16 | 4 | * | - | - | 789 | 10 | 799 |

*Less than one-half of 1 per cent.

TABLE C.5

FIELD OF STUDY BY AMOUNT OF TOTAL STIPENDS HELD

(Per Cent)

| Field of Study | Amount of Total Stipends Held | | | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $0 | $100 to $999 | $1,000 to $1,499 | $1,500 to $2,499 | $2,500 to $2,999 | $3,000 to $4,999 | $5,000 to $7,999 | $8,000 to $9,999 | $10,000 to $10,999 | $11,000 and Up | | | |
| **Physical Sciences** | | | | | | | | | | | | | |
| General physical sciences. . . . . . | 36 | 22 | 5 | 13 | 1 | 14 | 8 | 1 | - | - | 157 | 3 | 160 |
| All other earth and physical sciences . | 31 | 17 | 4 | 10 | 7 | 27 | 3 | - | * | * | 268 | 6 | 274 |
| Astronomy . . . . . . | 17 | 10 | 4 | 23 | 16 | 29 | 2 | - | - | - | 239 | - | 239 |
| Chemistry . . . . . . | 18 | 10 | 4 | 24 | 14 | 29 | 1 | - | * | * | 572 | 8 | 580 |
| Physics . . . . . . . | 24 | 10 | 3 | 17 | 13 | 30 | 2 | * | * | - | 492 | 7 | 499 |
| Geography . . . . . . | 42 | 13 | 5 | 22 | 8 | 7 | 3 | - | - | - | 543 | 5 | 548 |
| Geology and geophysics | 27 | 7 | 8 | 26 | 13 | 18 | 2 | - | - | - | 491 | 2 | 493 |
| Oceanography. . . . . | 11 | 8 | 1 | 23 | 10 | 40 | 7 | - | 1 | - | 167 | 2 | 169 |
| Metallurgy. . . . . . | 38 | 20 | 2 | 4 | 5 | 24 | 6 | * | * | - | 198 | 2 | 200 |
| Meteorology . . . . . | 20 | 17 | 11 | 9 | 8 | 22 | 11 | 2 | - | - | 242 | 8 | 250 |
| Mathematics . . . . . | 31 | 18 | 4 | 16 | 8 | 19 | 3 | * | - | 1 | 511 | 7 | 518 |
| **Engineering** | | | | | | | | | | | | | |
| All other engineering | 31 | 21 | 6 | 11 | 8 | 19 | 4 | 1 | * | 1 | 618 | 7 | 625 |
| Civil engineering . . | 37 | 12 | 6 | 12 | 8 | 17 | 6 | 1 | * | * | 654 | 13 | 667 |
| Chemical engineering | 29 | 14 | 2 | 13 | 13 | 27 | 2 | 1 | * | - | 713 | 10 | 723 |
| Electrical engineering | 45 | 24 | 3 | 7 | 6 | 11 | 3 | 1 | * | * | 845 | 15 | 860 |
| Mechanical engineering | 41 | 23 | 3 | 11 | 5 | 12 | 3 | * | * | * | 831 | 21 | 852 |
| **Life Sciences** | | | | | | | | | | | | | |
| All other biology. . . | 18 | 4 | 3 | 19 | 21 | 31 | 4 | - | - | - | 429 | 3 | 432 |
| Anatomy . . . . . . . | 17 | 8 | 4 | 14 | 11 | 37 | 10 | 1 | - | - | 237 | 1 | 238 |
| General biology . . . | 27 | 12 | 4 | 12 | 9 | 33 | 2 | * | - | - | 799 | 8 | 807 |
| Biochemistry. . . . . | 8 | 10 | 2 | 17 | 21 | 37 | 3 | 1 | 1 | - | 520 | 1 | 521 |
| Botany. . . . . . . . | 11 | 11 | 4 | 27 | 22 | 22 | 2 | 1 | * | - | 589 | 3 | 592 |
| Biophysics. . . . . . | 9 | 3 | 2 | 8 | 10 | 57 | 9 | 1 | * | - | 203 | - | 203 |
| Genetics. . . . . . . | 10 | 6 | 2 | 17 | 22 | 39 | 5 | * | - | - | 282 | 1 | 283 |
| Microbiology. . . . . | 13 | 11 | 6 | 30 | 16 | 17 | 6 | * | - | - | 661 | 3 | 664 |
| Pathology . . . . . . | 27 | 14 | 2 | 3 | 3 | 15 | 29 | 4 | 3 | - | 117 | 1 | 118 |
| Pharmacology. . . . . | 13 | 4 | 2 | 14 | 16 | 41 | 10 | * | - | - | 226 | 2 | 228 |
| Physiology. . . . . . | 14 | 5 | 5 | 18 | 13 | 33 | 10 | 2 | * | - | 463 | 1 | 464 |
| Zoology . . . . . . . | 15 | 6 | 6 | 33 | 18 | 19 | 3 | - | - | - | 622 | 3 | 625 |
| Agriculture . . . . . | 24 | 4 | 2 | 23 | 18 | 26 | 3 | * | - | * | 470 | 3 | 473 |
| Forestry. . . . . . . | 29 | 10 | 8 | 29 | 13 | 11 | 1 | - | * | - | 470 | 3 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | |
| Psychology. . . . . . | 33 | 8 | 6 | 21 | 11 | 18 | 3 | * | - | - | 694 | 4 | 698 |
| Anthropology. . . . . | 33 | 9 | 5 | 20 | 9 | 21 | 2 | - | - | * | 602 | 7 | 609 |
| Economics . . . . . . | 38 | 9 | 5 | 18 | 12 | 15 | 4 | * | - | - | 668 | 11 | 679 |
| Sociology . . . . . . | 36 | 10 | 5 | 18 | 10 | 18 | 3 | * | - | * | 551 | 8 | 559 |
| **Humanities** | | | | | | | | | | | | | |
| English . . . . . . . | 54 | 11 | 3 | 16 | 7 | 8 | * | - | - | - | 508 | 7 | 515 |
| History . . . . . . . | 53 | 12 | 4 | 17 | 5 | 8 | * | - | - | - | 566 | 12 | 578 |
| **Social Work** | | | | | | | | | | | | | |
| Social work . . . . . | 23 | 10 | 5 | 27 | 11 | 18 | 5 | * | - | * | 789 | 10 | 799 |

*Less than one-half per cent

TABLE C.6

FIELD OF STUDY BY DURATION OF FIRST STIPEND

(Per Cent)

| Field of Study | Duration of First Stipend (Months) | | | | | | | | | | | | | Inapplicable | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | One | Two | Three | Four | Five | Six | Seven | Eight | Nine | Ten | Eleven | Twelve | N | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | | |
| General physical sciences . | - | 15 | 22 | 1 | 2 | 1 | 1 | 1 | 23 | 23 | 2 | 8 | 99 | 61 | - | 160 |
| All other earth and physical sciences . . . . | - | 1 | 4 | 2 | 2 | 2 | 1 | 4 | 23 | 13 | 1 | 46 | 180 | 94 | - | 274 |
| Astronomy . . . . . . . . . | - | 5 | 2 | 4 | 3 | - | - | 6 | 52 | 12 | * | 16 | 197 | 42 | - | 239 |
| Chemistry . . . . . . . . . | * | 3 | 3 | 3 | 5 | 3 | 1 | 2 | 30 | 18 | 3 | 27 | 464 | 116 | - | 580 |
| Physics . . . . . . . . . . | * | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 36 | 13 | 3 | 34 | 372 | 127 | - | 499 |
| Geography . . . . . . . . . | - | 2 | 6 | 5 | 5 | 3 | 1 | 2 | 44 | 20 | 1 | 12 | 304 | 244 | - | 548 |
| Geology and geophysics. . . | * | 1 | 5 | 3 | 4 | 1 | 1 | 3 | 47 | 16 | 1 | 17 | 352 | 141 | - | 493 |
| Oceanography. . . . . . . . | - | 3 | 2 | 2 | 1 | 3 | - | 3 | 36 | 11 | 1 | 39 | 149 | 20 | - | 169 |
| Metallurgy. . . . . . . . . | 1 | - | 4 | 7 | 1 | 3 | 1 | - | 24 | 7 | - | 51 | 121 | 79 | - | 200 |
| Meteorology . . . . . . . . | 2 | 1 | 2 | 2 | 5 | 3 | - | 2 | 16 | 12 | 2 | 54 | 192 | 58 | - | 250 |
| Mathematics . . . . . . . . | 1 | 5 | 3 | 4 | 4 | 2 | - | 4 | 41 | 18 | 1 | 17 | 341 | 177 | - | 518 |
| **Engineering** | | | | | | | | | | | | | | | | |
| All other engineering . . . | - | - | 4 | 5 | 4 | 6 | 1 | 3 | 36 | 13 | 1 | 29 | 416 | 209 | - | 625 |
| Civil engineering . . . . . | - | 1 | 2 | 5 | 7 | 2 | 1 | 4 | 40 | 16 | - | 22 | 414 | 253 | - | 667 |
| Chemical engineering. . . . | * | 3 | 3 | 4 | 6 | 3 | - | 3 | 36 | 10 | 1 | 30 | 505 | 218 | - | 723 |
| Electrical engineering. . . | - | 1 | 4 | 7 | 5 | 5 | 2 | 6 | 37 | 10 | 1 | 21 | 457 | 403 | - | 860 |
| Mechanical engineering. . . | * | 1 | 2 | 7 | 8 | 4 | 1 | 5 | 40 | 9 | 1 | 21 | 482 | 370 | - | 852 |
| **Life Sciences** | | | | | | | | | | | | | | | | |
| All other biology . . . . . | 1 | 2 | 2 | 3 | 3 | 3 | 1 | 1 | 20 | 11 | 3 | 52 | 343 | 89 | - | 432 |
| Anatomy . . . . . . . . . . | 1 | 2 | 4 | 2 | 5 | 3 | 1 | 1 | 11 | 10 | 3 | 59 | 192 | 46 | - | 238 |
| General biology . . . . . . | 1 | 5 | 4 | 3 | 6 | 2 | - | 3 | 25 | 27 | 2 | 22 | 540 | 267 | - | 807 |
| Biochemistry. . . . . . . . | * | 3 | 3 | 2 | 1 | 3 | 1 | 1 | 17 | 8 | 3 | 58 | 467 | 54 | - | 521 |
| Botany. . . . . . . . . . . | - | 4 | 5 | 2 | 5 | 2 | 1 | 1 | 31 | 17 | 2 | 30 | 515 | 77 | - | 592 |
| Biophysics. . . . . . . . . | 1 | - | 1 | 2 | 1 | 3 | 1 | 3 | 21 | 10 | - | 58 | 183 | 20 | - | 203 |
| Genetics. . . . . . . . . . | - | 3 | 4 | 1 | 2 | 3 | 1 | 1 | 14 | 15 | 2 | 54 | 248 | 35 | - | 283 |
| Microbiology. . . . . . . . | 1 | 8 | 3 | 5 | 3 | 2 | - | 2 | 22 | 9 | 2 | 44 | 565 | 99 | - | 664 |
| Pathology . . . . . . . . . | - | 1 | 5 | - | 1 | 6 | - | 2 | 7 | 4 | 2 | 71 | 82 | 36 | - | 118 |
| Pharmacology. . . . . . . . | 1 | 1 | 4 | 1 | 2 | 4 | 1 | 1 | 8 | 11 | 3 | 66 | 189 | 39 | - | 228 |
| Physiology. . . . . . . . . | - | 1 | 4 | 2 | 4 | 4 | 1 | 2 | 18 | 7 | 3 | 55 | 393 | 71 | - | 464 |
| Zoology . . . . . . . . . . | - | 4 | 3 | 2 | 7 | 3 | * | 2 | 34 | 19 | 2 | 23 | 518 | 107 | - | 625 |
| Agriculture . . . . . . . . | * | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 14 | 7 | 2 | 68 | 351 | 122 | - | 473 |
| Forestry. . . . . . . . . . | * | 2 | 5 | 4 | 6 | 4 | * | 3 | 24 | 7 | 2 | 42 | 331 | 142 | - | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | |
| Psychology. . . . . . . . . | * | 3 | 1 | 2 | 5 | 2 | 2 | 2 | 31 | 21 | 2 | 28 | 453 | 245 | - | 698 |
| Anthropology. . . . . . . . | - | 1 | 5 | 5 | 5 | 4 | 1 | 7 | 35 | 17 | - | 20 | 393 | 216 | - | 609 |
| Economics . . . . . . . . . | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 42 | 15 | 2 | 23 | 411 | 268 | - | 679 |
| Sociology . . . . . . . . . | 1 | 2 | 4 | 3 | 6 | 3 | 1 | 3 | 34 | 22 | 1 | 19 | 343 | 216 | - | 559 |
| **Humanities** | | | | | | | | | | | | | | | | |
| English . . . . . . . . . . | - | 2 | 3 | 3 | 7 | 2 | - | 6 | 48 | 18 | 1 | 8 | 217 | 298 | - | 515 |
| History . . . . . . . . . . | 1 | 2 | 2 | 5 | 7 | 1 | * | 6 | 37 | 23 | 1 | 14 | 270 | 308 | - | 578 |
| **Social Work** | | | | | | | | | | | | | | | | |
| Social work . . . . . . . . | - | * | 2 | 3 | 3 | 2 | * | 14 | 57 | 11 | 1 | 6 | 598 | 201 | - | 799 |

*Less than one-half of 1 per cent.

TABLE C.7

FIELD OF STUDY BY TYPE OF SECOND STIPEND

(Per Cent)

| Field of Study | Type of Second Stipend: Scholar-ship ≤ Tuition | Fellow-ship and Cash | Research Assistant | Teaching Assistant | N | NA | No Stipends | No Second Stipends | Total N |
|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | |
| General physical sciences . . . . . . | 27 | 64 | - | 9 | 22 | 6 | 59 | 73 | 160 |
| All other earth and physical sciences. . | 26 | 17 | 43 | 13 | 46 | 1 | 87 | 140 | 274 |
| Astronomy. . . . . . . | 22 | 16 | 38 | 25 | 64 | 2 | 40 | 133 | 239 |
| Chemistry. . . . . . . | 15 | 18 | 41 | 26 | 175 | 5 | 108 | 292 | 580 |
| Physics. . . . . . . . | 34 | 15 | 28 | 23 | 100 | 3 | 121 | 275 | 499 |
| Geography. . . . . . . | 29 | 29 | 22 | 19 | 78 | 6 | 232 | 232 | 548 |
| Geology and geophysics | 25 | 27 | 25 | 23 | 115 | 4 | 135 | 239 | 493 |
| Oceanography . . . . . | 20 | 18 | 51 | 11 | 45 | - | 19 | 105 | 169 |
| Metallurgy . . . . . . | 32 | 5 | 50 | 14 | 22 | 2 | 75 | 101 | 200 |
| Meteorology. . . . . . | 29 | 11 | 37 | 23 | 35 | 2 | 52 | 161 | 250 |
| Mathematics. . . . . . | 34 | 24 | 8 | 34 | 106 | 6 | 165 | 241 | 518 |
| **Engineering** | | | | | | | | | |
| All other engineering. | 45 | 9 | 28 | 19 | 105 | 8 | 191 | 321 | 625 |
| Civil engineering. . . | 26 | 20 | 31 | 23 | 107 | 6 | 246 | 308 | 667 |
| Chemical engineering . | 34 | 17 | 31 | 18 | 174 | 5 | 212 | 332 | 723 |
| Electrical engineering | 53 | 7 | 24 | 16 | 105 | 11 | 378 | 366 | 860 |
| Mechanical engineering | 46 | 10 | 24 | 20 | 125 | 4 | 350 | 373 | 852 |
| **Life Sciences** | | | | | | | | | |
| All other biology. . . | 13 | 22 | 46 | 19 | 90 | 6 | 81 | 255 | 432 |
| Anatomy. . . . . . . . | 12 | 29 | 14 | 45 | 49 | 3 | 39 | 147 | 238 |
| General biology. . . . | 28 | 26 | 15 | 31 | 144 | 6 | 224 | 433 | 807 |
| Biochemistry . . . . . | 22 | 23 | 34 | 21 | 116 | 4 | 43 | 358 | 521 |
| Botany . . . . . . . . | 19 | 25 | 30 | 26 | 149 | 11 | 68 | 364 | 592 |
| Biophysics . . . . . . | 16 | 25 | 21 | 39 | 57 | - | 18 | 128 | 203 |
| Genetics . . . . . . . | 26 | 20 | 31 | 23 | 61 | 2 | 30 | 190 | 283 |
| Microbiology . . . . . | 25 | 30 | 20 | 25 | 106 | 5 | 87 | 466 | 664 |
| Pathology. . . . . . . | 35 | 35 | 24 | 6 | 17 | 2 | 32 | 67 | 118 |
| Pharmacology . . . . . | 28 | 18 | 28 | 26 | 39 | 1 | 31 | 157 | 228 |
| Physiology . . . . . . | 16 | 28 | 28 | 27 | 113 | 2 | 65 | 284 | 464 |
| Zoology. . . . . . . . | 16 | 25 | 32 | 27 | 165 | 14 | 97 | 349 | 625 |
| Agriculture. . . . . . | 33 | 24 | 35 | 9 | 55 | 2 | 111 | 305 | 473 |
| Forestry . . . . . . . | 23 | 30 | 29 | 19 | 70 | 6 | 136 | 271 | 473 |
| **Behavioral Sciences** | | | | | | | | | |
| Psychology . . . . . . | 23 | 14 | 41 | 21 | 140 | 13 | 234 | 311 | 698 |
| Anthropology . . . . . | 27 | 31 | 29 | 12 | 120 | 6 | 204 | 279 | 609 |
| Economics. . . . . . . | 28 | 21 | 24 | 27 | 116 | 3 | 259 | 301 | 679 |
| Sociology. . . . . . . | 23 | 17 | 37 | 22 | 98 | 6 | 208 | 247 | 559 |
| **Humanities** | | | | | | | | | |
| English. . . . . . . . | 40 | 25 | 4 | 32 | 53 | 7 | 279 | 176 | 515 |
| History. . . . . . . . | 37 | 29 | 6 | 29 | 52 | 5 | 304 | 217 | 578 |
| **Social Work** | | | | | | | | | |
| Social work. . . . . . | 57 | 35 | 8 | - | 105 | 8 | 184 | 502 | 799 |

TABLE C.8

FIELD OF STUDY BY SOURCE OF SECOND STIPEND

(Per Cent)

| Field of Study | Source of Second Stipend | | | | | | | | | | | | | | | | | | | | N | NA | Inapplicable | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | NASA | Office of Educ. | | Public Health Service | | | Other Federal Government | Sub-total Federal Government | Private Foundation/ Philanthropic Orgn. | Industry/Business Firm | Directly from School | School Source Unknown | State or Local Government | Foreign Government | Other | Sub-total Non-federal Government | | | | |
| | | | | | | NDEA | Other | NIH Fellow | NIH Training | Other PHS | | | | | | | | | | | | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | | | | | | | | | | |
| General physical sciences . . . . | - | - | 77 | - | - | - | - | - | - | - | - | 77 | - | - | 5 | 9 | - | - | 9 | 23 | 22 | 6 | 132 | 160 |
| All other earth and physical sciences | 7 | 9 | 9 | - | - | - | - | - | - | 2 | 2 | 28 | 7 | 11 | 46 | 7 | 2 | - | - | 72 | 46 | 1 | 227 | 274 |
| Astronomy . . . . . | - | 8 | 8 | - | 2 | - | - | - | - | - | 3 | 20 | 8 | - | 56 | 14 | 2 | - | - | 80 | 64 | 2 | 173 | 239 |
| Chemistry . . . . . | 4 | 3 | 14 | - | 1 | 1 | - | 2 | 1 | 2 | 1 | 29 | 6 | 12 | 36 | 14 | 1 | - | 2 | 71 | 175 | 5 | 400 | 580 |
| Physics . . . . . . | 15 | 3 | 9 | - | 2 | 3 | - | - | - | - | 2 | 34 | 5 | 3 | 42 | 12 | 3 | - | 1 | 66 | 100 | 3 | 396 | 499 |
| Geography . . . . . | - | - | 6 | - | - | 3 | - | - | - | - | 4 | 13 | 17 | - | 59 | 5 | 3 | - | 4 | 87 | 78 | 6 | 464 | 548 |
| Geology and geophysics. . . . | 1 | 2 | 21 | - | - | 1 | - | - | - | - | 3 | 27 | 10 | 3 | 45 | 7 | 6 | - | 2 | 73 | 115 | 4 | 374 | 493 |
| Oceanography. . . . | 2 | 11 | 18 | - | - | 4 | - | - | 2 | 2 | 2 | 42 | 2 | 2 | 36 | 16 | 2 | - | - | 58 | 45 | - | 124 | 169 |
| Metallurgy. . . . . | 27 | - | - | - | - | - | - | - | - | - | - | 27 | 5 | 18 | 45 | 5 | - | - | - | 73 | 22 | 2 | 176 | 200 |
| Meteorology . . . . | - | 20 | 11 | - | - | 3 | - | - | - | - | 17 | 51 | 3 | 3 | 40 | 3 | - | - | - | 49 | 35 | 2 | 213 | 250 |
| Mathematics . . . . | 1 | 3 | 25 | - | - | - | - | - | - | - | 1 | 30 | 1 | 5 | 50 | 8 | 5 | - | 2 | 70 | 106 | 6 | 406 | 518 |
| **Engineering** | | | | | | | | | | | | | | | | | | | | | | | | |
| All other engineering . . . . . . . | 2 | 6 | 7 | - | 1 | - | - | - | - | - | 1 | 16 | 6 | 15 | 41 | 13 | 8 | - | 1 | 84 | 105 | 8 | 512 | 625 |
| Civil engineering . | - | 7 | 5 | - | - | 1 | - | - | - | 1 | - | 14 | 8 | 8 | 45 | 9 | 9 | - | 6 | 86 | 107 | 6 | 554 | 667 |
| Chemical engineering | 2 | 1 | 12 | - | 1 | 2 | 1 | - | - | 1 | 1 | 21 | 2 | 17 | 39 | 17 | 5 | - | - | 79 | 174 | 5 | 544 | 723 |
| Electrical engineering . . . . . . . | 1 | 6 | 3 | - | 4 | - | - | - | - | - | 3 | 16 | 3 | 26 | 40 | 9 | 4 | - | 3 | 84 | 105 | 11 | 744 | 860 |
| Mechanical engineering . . . . . . . | 2 | 5 | 3 | - | 6 | 2 | - | - | 1 | - | 3 | 22 | 5 | 25 | 40 | 6 | 3 | - | - | 78 | 125 | 4 | 723 | 852 |
| **Life Sciences** | | | | | | | | | | | | | | | | | | | | | | | | |
| All other biology . | 1 | 2 | 19 | - | - | 1 | - | 1 | 2 | 1 | 1 | 29 | 4 | 1 | 39 | 16 | 10 | - | 1 | 71 | 90 | 6 | 336 | 432 |
| Anatomy . . . . . . | - | - | 2 | 2 | - | - | - | 4 | 22 | - | 2 | 33 | 10 | - | 41 | 12 | 4 | - | - | 67 | 49 | 3 | 186 | 238 |
| General biology . . | - | - | 22 | - | - | 3 | - | 1 | 8 | 2 | 1 | 37 | 5 | 1 | 40 | 6 | 9 | - | 1 | 62 | 144 | 6 | 657 | 807 |
| Biochemistry. . . . | 3 | - | 4 | - | - | - | 1 | 6 | 23 | 2 | 3 | 41 | 7 | - | 23 | 17 | 8 | - | 3 | 59 | 116 | 4 | 401 | 521 |

TABLE C.8--Continued

| Field of Study | Source of Second Stipend: Atomic Energy Commission | Department of Defense | National Science Foundation | Veterans Administration | NASA | Office of Educ.: NDEA | Office of Educ.: Other | Public Health Service: NIH Fellow | Public Health Service: NIH Training | Public Health Service: Other PHS | Other Federal Government | Sub-total Federal Government | Private Foundation/ Philanthropic Orgn. | Industry/Business Firm | Directly from School | School Source Unknown | State or Local Government | Foreign Government | Other | Sub-total Non-federal Government | N | NA | Inapplicable | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Life Sciences--Continued** | | | | | | | | | | | | | | | | | | | | | | | | |
| Botany | - | 1 | 29 | 1 | - | 4 | - | 1 | - | 1 | 3 | 39 | 3 | 1 | 43 | 8 | 5 | - | 2 | 61 | 149 | 11 | 432 | 592 |
| Biophysics | 7 | - | 2 | - | 2 | - | - | 5 | 28 | 2 | - | 46 | 2 | - | 28 | 19 | 4 | - | 2 | 54 | 57 | - | 146 | 203 |
| Genetics | 3 | - | 5 | - | - | 7 | 2 | - | 10 | 2 | - | 28 | 2 | - | 43 | 23 | 5 | - | - | 72 | 61 | 2 | 220 | 283 |
| Microbiology | 2 | - | 22 | 2 | - | 1 | - | 1 | 13 | 6 | - | 46 | 1 | - | 38 | 8 | 8 | - | - | 54 | 106 | 5 | 553 | 664 |
| Pathology | - | - | - | - | - | - | - | 12 | 24 | - | 6 | 41 | 6 | - | 47 | - | 6 | - | - | 59 | 17 | 2 | 99 | 118 |
| Pharmacology | - | - | 3 | - | - | - | - | 5 | 21 | 8 | - | 36 | 8 | 3 | 23 | 21 | 5 | - | 5 | 64 | 39 | 1 | 188 | 228 |
| Physiology | 2 | - | 6 | - | 1 | 1 | - | 7 | 15 | 4 | 3 | 38 | 4 | 4 | 40 | 10 | 4 | - | 1 | 62 | 113 | 2 | 349 | 464 |
| Zoology | 1 | - | 21 | - | - | 3 | - | 3 | 2 | 2 | 2 | 34 | 2 | - | 45 | 12 | 7 | - | 1 | 66 | 165 | 14 | 446 | 625 |
| Agriculture | 4 | - | 4 | - | - | 2 | - | - | 2 | - | 7 | 18 | 13 | 5 | 40 | 15 | 4 | - | 5 | 82 | 55 | 2 | 416 | 473 |
| Forestry | 1 | - | 9 | 1 | - | 3 | 1 | 3 | - | - | 3 | 21 | 13 | 10 | 37 | 11 | 7 | - | - | 79 | 70 | 6 | 397 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | | | | | | |
| Psychology | - | 2 | 4 | 2 | - | 2 | 1 | 4 | 1 | 6 | 1 | 24 | 4 | 1 | 50 | 12 | 6 | - | 3 | 76 | 140 | 13 | 545 | 698 |
| Anthropology | - | - | 12 | - | - | 5 | - | 4 | 1 | - | 4 | 27 | 11 | 1 | 45 | 7 | 7 | - | 2 | 73 | 120 | 6 | 483 | 609 |
| Economics | - | 2 | 3 | - | - | 3 | - | - | - | - | 1 | 8 | 7 | 2 | 59 | 12 | 10 | - | 3 | 92 | 116 | 3 | 560 | 679 |
| Sociology | - | - | 1 | - | - | 2 | - | 4 | 3 | 2 | 4 | 16 | 9 | 1 | 53 | 12 | 6 | - | 2 | 84 | 98 | 6 | 455 | 559 |
| **Humanities** | | | | | | | | | | | | | | | | | | | | | | | | |
| English | - | 2 | - | - | - | 9 | - | - | - | - | - | 11 | 8 | - | 62 | 6 | 8 | - | 6 | 89 | 53 | 7 | 455 | 515 |
| History | - | - | - | - | - | 4 | - | - | - | - | - | 4 | 15 | 4 | 62 | 6 | 6 | - | 4 | 96 | 52 | 5 | 521 | 578 |
| **Social Work** | | | | | | | | | | | | | | | | | | | | | | | | |
| Social work | - | - | - | 2 | - | 1 | 1 | 4 | 4 | - | 3 | 14 | 28 | 1 | 22 | 6 | 25 | 1 | 4 | 86 | 105 | 8 | 686 | 799 |

TABLE C.9

FIELD OF STUDY BY TYPE OF LOANS USED FOR FINANCING GRADUATE STUDY

(Per Cent)

| Field of study | Loans used for financing graduate study | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tuition deferred for more than three months | Other payment deferred to the university more than three months | Cash borrowed from university | National Defense Education loan | Banks and insurance companies | Family loans which are to be paid | Other specifically education loan | None of the above | | | |
| **Physical sciences** | | | | | | | | | | | |
| General physical sciences . . . . . . | - | - | 1 | 6 | 5 | 6 | 3 | 83 | 144 | 16 | 160 |
| All other earth and physical sciences . | 1 | * | - | 2 | 5 | 7 | 5 | 82 | 258 | 16 | 274 |
| Astronomy . . . . . . | * | - | 3 | 3 | 1 | 8 | 1 | 86 | 223 | 16 | 239 |
| Chemistry . . . . . . | 2 | * | 4 | 2 | 4 | 9 | 2 | 83 | 529 | 51 | 580 |
| Physics . . . . . . . | 2 | - | 4 | 3 | 3 | 6 | 2 | 84 | 453 | 46 | 499 |
| Geography . . . . . . | 1 | * | 6 | 5 | 8 | 10 | 2 | 74 | 479 | 69 | 548 |
| Geology and geophysics | 2 | 1 | 7 | 3 | 5 | 16 | 2 | 74 | 449 | 44 | 493 |
| Oceanography . . . . . | 1 | - | 4 | 6 | 5 | 11 | 1 | 76 | 152 | 17 | 169 |
| Metallurgy . . . . . . | - | 1 | 2 | 1 | 3 | 4 | 3 | 88 | 181 | 19 | 200 |
| Meteorology . . . . . | 2 | * | 3 | 1 | 3 | 7 | 4 | 83 | 229 | 21 | 250 |
| Mathematics . . . . . | 1 | - | 1 | 2 | 3 | 7 | 3 | 86 | 472 | 46 | 518 |
| **Engineering** | | | | | | | | | | | |
| All other engineering | 2 | 1 | 1 | 1 | 3 | 6 | 5 | 85 | 568 | 57 | 625 |
| Civil engineering . . | 2 | 1 | 1 | 1 | 5 | 7 | 5 | 82 | 619 | 48 | 667 |
| Chemical engineering . | 1 | * | 2 | 2 | 3 | 6 | 4 | 86 | 661 | 62 | 723 |
| Electrical engineering | 1 | * | 2 | 1 | 2 | 4 | 4 | 87 | 798 | 62 | 860 |
| Mechanical engineering | 2 | * | 2 | 1 | 3 | 5 | 5 | 85 | 784 | 68 | 852 |
| **Life sciences** | | | | | | | | | | | |
| All other biology . . | 2 | 2 | 4 | 3 | 7 | 7 | 2 | 79 | 381 | 51 | 432 |
| Anatomy . . . . . . . | * | - | 5 | 2 | 7 | 8 | 3 | 79 | 203 | 35 | 238 |
| General biology . . . | 2 | * | 2 | 4 | 5 | 7 | 2 | 83 | 755 | 52 | 807 |
| Biochemistry . . . . . | * | 1 | 4 | 2 | 3 | 10 | 4 | 80 | 477 | 44 | 521 |
| Botany . . . . . . . . | 2 | * | 4 | 2 | 5 | 11 | 1 | 80 | 542 | 50 | 592 |
| Biophysics . . . . . . | 1 | 1 | 4 | - | 2 | 4 | 2 | 88 | 182 | 21 | 203 |
| Genetics . . . . . . . | * | 1 | 5 | 2 | 7 | 8 | 2 | 80 | 260 | 23 | 283 |
| Microbiology . . . . . | 1 | * | 2 | 1 | 5 | 10 | 3 | 81 | 617 | 47 | 664 |
| Pathology . . . . . . | - | - | 2 | - | 6 | 9 | 3 | 86 | 100 | 18 | 118 |
| Pharmacology . . . . . | - | * | 5 | 1 | 6 | 9 | 1 | 82 | 201 | 27 | 228 |
| Physiology . . . . . . | 2 | 1 | 4 | 3 | 6 | 9 | 4 | 80 | 403 | 61 | 464 |
| Zoology . . . . . . . | 2 | 1 | 4 | 2 | 6 | 10 | 1 | 81 | 562 | 63 | 625 |
| Agriculture . . . . . | 1 | * | 4 | 5 | 8 | 14 | 3 | 74 | 419 | 54 | 473 |
| Forestry . . . . . . . | * | * | 6 | 6 | 7 | 13 | 2 | 74 | 433 | 40 | 473 |

*Less than one-half of 1 per cent.

TABLE C.9--Continued

| Field of study | Loans used for financing graduate study: Tuition deferred for more than three months | Other payment deferred to the university more than three months | Cash borrowed from university | National Defense Education loan | Banks and insurance companies | Family loans which are to be paid | Other specifically education loan | None of the above | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Behavioral sciences | | | | | | | | | | | |
| Psychology . . . . . | 3 | * | 6 | 4 | 5 | 11 | 2 | 75 | 649 | 49 | 698 |
| Anthropology . . . . | 2 | * | 9 | 3 | 4 | 9 | 1 | 78 | 535 | 74 | 609 |
| Economics . . . . . . | 2 | 1 | 5 | 3 | 6 | 8 | 2 | 78 | 600 | 79 | 679 |
| Sociology . . . . . . | 2 | 1 | 8 | 2 | 7 | 9 | 3 | 76 | 496 | 63 | 559 |
| Humanities | | | | | | | | | | | |
| English . . . . . . . | 1 | - | 4 | 5 | 6 | 9 | 2 | 79 | 459 | 56 | 515 |
| History . . . . . . . | 3 | 1 | 4 | 4 | 4 | 8 | 3 | 79 | 512 | 66 | 578 |
| Social work | | | | | | | | | | | |
| Social work . . . . . | 2 | * | 3 | 2 | 5 | 8 | 7 | 78 | 743 | 56 | 799 |

*Less than one-half of 1 per cent.

TABLE C.10

SOURCES OF INCOME AMONG AMERICAN GRADUATE STUDENTS IN THIRTY-SEVEN FIELDS OF STUDY

(Per Cent Reporting Any Income and Median Cash Value among Those Reporting Any)

| Field of Study | Total Income (8) | | Stipend Income: Total (3) | | Stipend Income: First (1) | | Stipend Income: Second (2) | | Other Income: Total (7) | | Other Income: Employment (4) | | Other Income: Spouse (6) | | Other Income: Parents (5) | | Loans: Total (11) | | Loans: NDEA (9) | | Loans: Other Educational (10) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| General physical science. | 98 | $6,000 | 63 | $1,800 | 63 | $1,500 | 16 | $400 | 84 | $5,400 | 72 | $5,100 | 29 | $2,900 | 12 | $400 | 22 | $1,200 | 6 | $400 | 2 | $300 | 170 |
| All other physical sciences | 98 | 6,500 | 69 | 2,700 | 69 | 2,400 | 17 | 600 | 80 | 6,000 | 52 | 8,000 | 21 | 3,600 | 16 | 200 | 17 | 1,000 | 1 | 300 | 2 | 400 | 327 |
| Astronomy | 100 | 4,400 | 85 | 2,700 | 85 | 2,300 | 28 | 700 | 83 | 2,500 | 55 | 1,500 | 33 | 2,700 | 28 | 400 | 14 | 1,000 | 2 | 300 | 3 | 700 | 278 |
| Chemistry | 99 | 4,200 | 81 | 2,500 | 81 | 2,300 | 29 | 700 | 77 | 2,400 | 41 | 4,600 | 27 | 2,700 | 24 | 300 | 16 | 600 | 2 | 500 | 5 | 300 | 686 |
| Physics . | 99 | 4,600 | 76 | 2,700 | 76 | 2,500 | 21 | 700 | 79 | 3,000 | 52 | 3,100 | 23 | 3,300 | 21 | 300 | 15 | 1,000 | 2 | 600 | 4 | 300 | 611 |
| Geography | 99 | 4,900 | 61 | 2,100 | 61 | 1,800 | 19 | 600 | 89 | 3,600 | 57 | 1,700 | 34 | 3,600 | 23 | 400 | 21 | 800 | 5 | 400 | 7 | 500 | 659 |
| Geophysics and geology. | 99 | 4,200 | 72 | 2,400 | 72 | 2,000 | 23 | 900 | 87 | 2,600 | 54 | 1,500 | 36 | 2,700 | 33 | 500 | 19 | 600 | 3 | 500 | 7 | 600 | 574 |
| Oceanography. | 99 | 4,800 | 87 | 3,000 | 87 | 2,500 | 24 | 900 | 84 | 2,500 | 42 | 1,300 | 34 | 2,600 | 26 | 200 | 21 | 900 | 4 | 400 | 4 | 200 | 199 |

TABLE C.10--Continued

| Field of Study | Total Income (8) | | Stipend Income: Total (3) | | Stipend Income: First (1) | | Stipend Income: Second (2) | | Other Income: Total (7) | | Other Income: Employment (4) | | Other Income: Spouse (6) | | Other Income: Parents (5) | | Loans: Total (11) | | Loans: NDEA (9) | | Loans: Other Educational (10) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Metallurgy. . | 99 | $7,500 | 61 | $2,800 | 61 | $2,400 | 11 | $800 | 85 | $7,200 | 59 | $7,600 | 22 | $3,400 | 16 | $300 | 22 | $1,000 | 1 | $1,000 | 4 | $800 | 222 |
| Meteorology. . | 98 | 6,400 | 81 | 2,500 | 81 | 2,400 | 15 | 800 | 86 | 4,200 | 34 | 2,000 | 26 | 2,500 | 19 | 200 | 18 | 700 | 1 | 400 | 6 | 500 | 291 |
| Mathematics . | 99 | 4,900 | 67 | 2,300 | 67 | 2,000 | 21 | 600 | 84 | 3,800 | 59 | 4,500 | 27 | 3,000 | 23 | 300 | 16 | 800 | 3 | 500 | 3 | 500 | 588 |
| All other engineering | 98 | 7,300 | 71 | 2,500 | 71 | 2,000 | 20 | 900 | 85 | 6,800 | 63 | 7,200 | 19 | 3,000 | 18 | 500 | 20 | 1,000 | 1 | 800 | 6 | 600 | 796 |
| Civil engineering | 98 | 5,600 | 66 | 2,600 | 66 | 2,200 | 17 | 1,000 | 83 | 4,300 | 63 | 4,300 | 23 | 3,000 | 18 | 500 | 19 | 1,000 | 1 | 300 | 4 | 900 | 937 |
| Chemical engineering | 99 | 5,000 | 71 | 2,700 | 71 | 2,300 | 24 | 800 | 81 | 3,400 | 58 | 4,100 | 22 | 2,800 | 22 | 2,800 | 21 | 1,000 | 1 | 800 | 7 | 1,000 | 949 |
| Electrical engineering. . . | 98 | 8,000 | 56 | 2,000 | 56 | 1,600 | 14 | 600 | 90 | 8,000 | 77 | 8,000 | 17 | 3,000 | 14 | 500 | 19 | 1,600 | 1 | 1,000 | 3 | 500 | 1,023 |

TABLE C.10--Continued

| Field of Study | Total Income (8) | | Stipend Income | | | | | | Other Income | | | | | | | | Loans | | | | | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total (3) | | First (1) | | Second (2) | | Total (7) | | Employment (4) | | Spouse (6) | | Parents (5) | | Total (11) | | NDEA (9) | | Other Educational (10) | | |
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Mechanical engineering. . . | 98 | $7,200 | 60 | $1,800 | 60 | $1,500 | 16 | $1,000 | 89 | $7,000 | 72 | $7,700 | 18 | $3,000 | 17 | $800 | 19 | $1,000 | 1 | $400 | 5 | $600 | 1068 |
| All other biological sci. | 99 | 4,200 | 84 | 2,800 | 84 | 2,600 | 22 | 1,000 | 73 | 2,200 | 27 | 2,000 | 36 | 2,400 | 23 | 300 | 21 | 800 | 4 | 500 | 6 | 500 | 550 |
| Anatomy . | 99 | 4,400 | 84 | 3,200 | 84 | 2,900 | 20 | 900 | 73 | 2,000 | 34 | 1,300 | 29 | 3,200 | 25 | 400 | 14 | 700 | 2 | 200 | 5 | 300 | 279 |
| Biological sci., general. | 99 | 4,500 | 71 | 2,900 | 71 | 2,500 | 18 | 600 | 84 | 2,800 | 46 | 3,500 | 33 | 3,100 | 24 | 300 | 13 | 700 | 3 | 400 | 2 | 300 | 894 |
| Biochemistry. . | 99 | 3,800 | 92 | 2,800 | 92 | 2,700 | 21 | 700 | 70 | 2,100 | 25 | 1,000 | 33 | 2,900 | 31 | 400 | 20 | 800 | 2 | 600 | 7 | 700 | 674 |
| Botany. . | 99 | 3,700 | 87 | 2,500 | 87 | 2,300 | 26 | 600 | 76 | 2,100 | 30 | 1,200 | 37 | 3,000 | 23 | 400 | 18 | 1,000 | 2 | 700 | 5 | 400 | 702 |
| Biophysics . . | 99 | 4,600 | 91 | 3,400 | 91 | 3,000 | 27 | 800 | 75 | 2,000 | 23 | 1,100 | 36 | 3,100 | 30 | 200 | 15 | 800 | - | - | 3 | 300 | 236 |
| Genetics. | 100 | 4,100 | 91 | 3,000 | 91 | 2,800 | 23 | 700 | 66 | 2,000 | 25 | 1,400 | 35 | 2,700 | 23 | 300 | 16 | 700 | 1 | 800 | 5 | 200 | 394 |

TABLE C.10--Continued

| Field of Study | Total Income (8) | | Stipend Income: Total (3) | | Stipend Income: First (1) | | Stipend Income: Second (2) | | Other Income: Total (7) | | Other Income: Employment (4) | | Other Income: Spouse (6) | | Other Income: Parents (5) | | Loans: Total (11) | | Loans: NDEA (9) | | Loans: Other Educational (10) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Microbiology. | 99 | $3,900 | 87 | $2,400 | 87 | $2,200 | 16 | $800 | 77 | $2,500 | 32 | $1,600 | 36 | $3,600 | 31 | $400 | 16 | $1,000 | 1 | $400 | 5 | $600 | 799 |
| Pathology | 98 | 7,100 | 75 | 4,500 | 75 | 3,800 | 18 | 1,300 | 72 | 5,000 | 11 | 400 | 23 | 3,500 | 11 | 400 | 16 | 2,000 | 1 | 500 | 3 | 600 | 167 |
| Pharmacology . | 99 | 4,900 | 88 | 3,100 | 88 | 3,000 | 19 | 800 | 75 | 2,600 | 31 | 2,300 | 35 | 3,400 | 26 | 400 | 14 | 1,000 | 1 | 800 | 3 | 600 | 281 |
| Physiology. . | 99 | 4,700 | 86 | 3,000 | 86 | 2,700 | 23 | 800 | 73 | 2,200 | 30 | 1,800 | 29 | 2,900 | 28 | 400 | 16 | 1,000 | 2 | 400 | 5 | 700 | 564 |
| Zoology . | 98 | 3,800 | 84 | 2,400 | 84 | 2,200 | 26 | 700 | 81 | 2,100 | 35 | 1,000 | 38 | 3,400 | 31 | 300 | 18 | 700 | 4 | 500 | 3 | 300 | 695 |
| Agriculture . . | 99 | 4,000 | 80 | 2,800 | 80 | 2,700 | 12 | 600 | 72 | 1,900 | 32 | 2,000 | 32 | 2,100 | 21 | 300 | 19 | 800 | 4 | 500 | 4 | 500 | 680 |
| Forestry. | 99 | 3,900 | 73 | 2,300 | 73 | 2,100 | 19 | 800 | 83 | 2,700 | 53 | 1,700 | 34 | 2,500 | 27 | 400 | 21 | 700 | 5 | 500 | 6 | 400 | 599 |
| Psychology. . . | 99 | 4,600 | 64 | 2,400 | 64 | 2,200 | 20 | 700 | 90 | 3,000 | 55 | 1,600 | 38 | 3,600 | 34 | 400 | 23 | 800 | 5 | 600 | 6 | 400 | 772 |
| Anthropology . | 99 | 4,200 | 66 | 2,500 | 66 | 2,200 | 21 | 700 | 89 | 2,800 | 46 | 1,200 | 37 | 3,900 | 33 | 500 | 20 | 600 | 3 | 800 | 8 | 500 | 684 |

TABLE C.10--Continued

| Field of Study | Total Income (8) | | Stipend Income | | | | | | Other Income | | | | | | | | Loans | | | | | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total (3) | | First (1) | | Second (2) | | Total (7) | | Employment (4) | | Spouse (6) | | Parents (5) | | Total (11) | | NDEA (9) | | Other Educational (10) | | |
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Economics | 98 | $4,500 | 65 | $2,500 | 65 | $2,300 | 18 | 600 | 85 | $3,000 | 54 | $2,000 | 32 | $2,600 | 25 | $500 | 22 | $700 | 3 | $800 | 5 | $500 | 859 |
| Sociology | 98 | 4,600 | 62 | 2,400 | 62 | 2,200 | 18 | 600 | 87 | 3,400 | 56 | 2,000 | 32 | 3,300 | 27 | 400 | 24 | 700 | 2 | 500 | 10 | 300 | 659 |
| English . | 93 | 4,600 | 46 | 2,000 | 46 | 2,000 | 12 | 400 | 92 | 4,200 | 59 | 3,500 | 34 | 5,000 | 31 | 400 | 19 | 900 | 3 | 600 | 5 | 300 | 546 |
| History . | 97 | 4,200 | 46 | 1,800 | 46 | 1,600 | 9 | 400 | 93 | 3,500 | 61 | 2,000 | 30 | 4,000 | 31 | 500 | 20 | 800 | 5 | 600 | 7 | 500 | 614 |
| Social work . . | 98 | 4,800 | 76 | 2,300 | 76 | 2,100 | 14 | 600 | 86 | 3,400 | 56 | 1,500 | 34 | 5,000 | 23 | 400 | 20 | 1,000 | 2 | 500 | 7 | 700 | 863 |

TABLE C.11

EXPENSES OF AMERICAN GRADUATE STUDENTS IN THIRTY-SEVEN FIELDS OF STUDY

(Per Cent Reporting Any Expense and Median Value of Expense among Those Reporting Any)

| Field of Study | Total Expenses (30) | | Academic Expenses: Total Academic Expenses (14) | | Tuition and Fees Covered by Stipend (06) | | Total Tuition Fees (10) | | Other Academic Expenses (12) | | Other Expenses: Total Other Expenses (24) | | Living (16) | | Health (20) | | Transportation (18) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Physical science, general | 98 | $5,200 | 98 | $200 | 63 | $200 | 95 | $200 | 91 | $100 | 98 | $4,900 | 98 | $3,000 | 88 | $300 | 94 | $400 | 170 |
| Physical science, all other | 98 | 5,600 | 97 | 500 | 66 | 500 | 94 | 400 | 92 | 100 | 98 | 4,800 | 98 | 3,000 | 82 | 200 | 91 | 400 | 327 |
| Astronomy . . | 100 | 4,100 | 99 | 800 | 85 | 700 | 97 | 700 | 96 | 100 | 100 | 3,400 | 99 | 2,200 | 80 | 100 | 94 | 300 | 278 |
| Chemistry . . | 99 | 4,000 | 98 | 400 | 80 | 400 | 96 | 300 | 94 | 100 | 99 | 3,200 | 98 | 2,000 | 98 | 2,000 | 92 | 300 | 686 |
| Physics . . . | 99 | 4,400 | 98 | 400 | 74 | 300 | 95 | 300 | 94 | 100 | 99 | 3,600 | 98 | 2,300 | 81 | 200 | 91 | 400 | 611 |
| Geography . . | 99 | 4,600 | 98 | 500 | 61 | 300 | 94 | 300 | 95 | 100 | 99 | 3,900 | 98 | 2,500 | 81 | 100 | 91 | 300 | 659 |
| Geology-geophysics. . | 99 | 4,300 | 99 | 500 | 71 | 300 | 97 | 300 | 98 | 100 | 99 | 3,500 | 99 | 2,400 | 82 | 200 | 95 | 300 | 574 |
| Oceanography . | 99 | 4,500 | 99 | 400 | 86 | 300 | 97 | 300 | 96 | 100 | 99 | 3,900 | 99 | 2,500 | 85 | 200 | 95 | 400 | 199 |
| Metallurgy . . | 99 | 6,200 | 98 | 500 | 61 | 400 | 96 | 400 | 93 | 100 | 99 | 5,600 | 99 | 3,300 | 86 | 200 | 90 | 400 | 222 |

TABLE C.11--Continued

| Field of Study | Total Expenses (30) | | Academic Expenses: Total Academic Expenses (14) | | Tuition and Fees Covered by Stipend (06) | | Total Tuition Fees (10) | | Other Academic Expenses (12) | | Other Expenses: Total Other Expenses (24) | | Living (16) | | Health (20) | | Transportation (18) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | Per Cent | Median | |
| Meteorology . | 99 | $5,800 | 97 | $ 600 | 80 | $600 | 92 | $600 | 92 | $600 | 98 | $500 | 98 | $3,300 | 79 | $200 | 90 | $400 | 291 |
| Mathematics . | 99 | 4,400 | 98 | 400 | 65 | 300 | 94 | 300 | 95 | 100 | 99 | 3,900 | 98 | 2,400 | 82 | 200 | 91 | 300 | 588 |
| All other engineering . | 99 | 6,000 | 97 | 600 | 70 | 700 | 95 | 500 | 91 | 100 | 98 | 5,400 | 98 | 3,200 | 83 | 200 | 92 | 500 | 796 |
| Civil engineering. . . . | 98 | 5,100 | 97 | 600 | 65 | 600 | 95 | 500 | 94 | 100 | 98 | 4,300 | 98 | 2,600 | 83 | 200 | 90 | 400 | 937 |
| Chemical engineering . | 99 | 4,700 | 98 | 500 | 70 | 600 | 96 | 400 | 95 | 100 | 99 | 3,900 | 98 | 2,400 | 82 | 200 | 89 | 300 | 949 |
| Electrical engineering . | 98 | 6,500 | 95 | 400 | 56 | 400 | 93 | 300 | 81 | 100 | 98 | 6,000 | 97 | 3,400 | 84 | 300 | 93 | 500 | 1,023 |
| Mechanical engineering . | 98 | 6,000 | 97 | 500 | 59 | 400 | 95 | 400 | 91 | 100 | 98 | 5,500 | 97 | 3,100 | 83 | 300 | 91 | 500 | 1,068 |
| All other biological sci.. | 99 | 4,100 | 98 | 500 | 82 | 300 | 95 | 300 | 97 | 100 | 99 | 3,400 | 98 | 2,300 | 88 | 100 | 92 | 300 | 550 |
| Anatomy . . . | 99 | 4,200 | 98 | 500 | 80 | 400 | 94 | 400 | 92 | 100 | 99 | 3,400 | 98 | 2,500 | 78 | 200 | 90 | 300 | 279 |

TABLE C.11--Continued

| Field of Study | Total Expenses (30) | | Academic Expenses: Total Academic Expenses (14) | | Tuition and Fees Covered by Stipend (06) | | Total Tuition Fees (10) | | Other Academic Expenses (12) | | Other Expenses: Total Other Expenses (24) | | Living (16) | | Health (20) | | Trans-portation (18) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | |
| Biology, general . . . | 99 | $4,100 | 98 | $400 | 65 | $300 | 90 | $300 | 94 | $100 | 99 | $3,600 | 98 | $2,300 | 84 | $200 | 94 | $300 | 894 |
| Biochemistry . | 100 | 3,800 | 99 | 600 | 89 | 400 | 96 | 500 | 95 | 100 | 100 | 2,900 | 100 | 2,000 | 79 | 100 | 90 | 300 | 674 |
| Botany . . . . | 99 | 3,700 | 99 | 500 | 85 | 300 | 96 | 300 | 98 | 100 | 99 | 3,000 | 99 | 2,100 | 84 | 100 | 92 | 300 | 702 |
| Biophysics . . | 99 | 4,500 | 99 | 800 | 87 | 700 | 95 | 600 | 92 | 100 | 99 | 3,600 | 99 | 2,500 | 81 | 100 | 94 | 300 | 236 |
| Genetics . . . | 100 | 4,000 | 98 | 600 | 86 | 500 | 94 | 400 | 95 | 100 | 100 | 3,400 | 100 | 2,300 | 85 | 200 | 92 | 300 | 394 |
| Microbiology . | 99 | 3,900 | 99 | 500 | 84 | 400 | 96 | 400 | 92 | 100 | 99 | 3,200 | 99 | 2,200 | 83 | 100 | 90 | 300 | 799 |
| Pathology . . | 98 | 6,500 | 93 | 400 | 68 | 400 | 86 | 400 | 88 | 100 | 98 | 5,600 | 98 | 3,500 | 83 | 200 | 91 | 400 | 167 |
| Pharmacology . | 99 | 4,800 | 99 | 700 | 87 | 500 | 97 | 500 | 96 | 100 | 99 | 3,900 | 99 | 2,600 | 83 | 200 | 92 | 300 | 281 |
| Physiology . . | 99 | 4,500 | 99 | 600 | 81 | 400 | 93 | 400 | 95 | 100 | 99 | 3,800 | 99 | 2,500 | 81 | 200 | 91 | 300 | 564 |
| Zoology . . . | 100 | 3,700 | 99 | 400 | 82 | 300 | 96 | 300 | 97 | 100 | 99 | 3,000 | 99 | 2,000 | 81 | 200 | 90 | 300 | 695 |

TABLE C.11--Continued

| Field of Study | Total Expenses (30) | | Academic Expenses: Total Academic Expenses (14) | | Academic Expenses: Tuition and Fees Covered by Stipend (06) | | Academic Expenses: Total Tuition Fees (10) | | Academic Expenses: Other Academic Expenses (12) | | Other Expenses: Total Other Expenses (24) | | Other Expenses: Living (16) | | Other Expenses: Health (20) | | Other Expenses: Trans-portation (18) | | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | Per Cent | Me-dian | |
| Agriculture . | 99 | $3,800 | 98 | $400 | 77 | $300 | 95 | $300 | 95 | $100 | 99 | $3,300 | 99 | $2,200 | 88 | $200 | 92 | $300 | 680 |
| Forestry . . . | 99 | 3,900 | 99 | 400 | 72 | 300 | 95 | 300 | 96 | 100 | 99 | 3,400 | 99 | 2,200 | 89 | 100 | 94 | 300 | 599 |
| Psychology . . | 99 | 4,500 | 99 | 500 | 64 | 400 | 96 | 300 | 97 | 100 | 99 | 3,700 | 97 | 2,500 | 8[illegible] | 200 | 92 | 300 | 772 |
| Anthropology . | 99 | 4,200 | 99 | 600 | 65 | 500 | 97 | 400 | 97 | 100 | 99 | 3,300 | 98 | 2,300 | 77 | 200 | 89 | 300 | 684 |
| Economics . . | 99 | 4,400 | 98 | 400 | 64 | 400 | 94 | 300 | 95 | 100 | 99 | 3,600 | 98 | 2,500 | 80 | 200 | 89 | 300 | 859 |
| Sociology . . | 98 | 4,400 | 98 | 500 | 61 | 400 | 94 | 300 | 97 | 100 | 98 | 3,600 | 98 | 2,400 | 84 | 200 | 89 | 300 | 659 |
| English . . . | 99 | 4,100 | 98 | 300 | 45 | 300 | 96 | 200 | 96 | 100 | 99 | 3,600 | 98 | 2,400 | 79 | 200 | 89 | 300 | 546 |
| History . . . | 98 | 4,100 | 97 | 400 | 46 | 300 | 95 | 300 | 94 | 100 | 97 | 3,500 | 96 | 2,200 | 7[illegible] | 200 | 89 | 300 | 614 |
| Social work . | 98 | 4,500 | 98 | 700 | 75 | 600 | 96 | 600 | 91 | 100 | 98 | 3,900 | 98 | 2,500 | 85 | 200 | 93 | 300 | 863 |

TABLE D.1

FIELD OF STUDY BY HIGHEST DEGREE HELD

(Per Cent)

| Field of Study | Highest Degree Held | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| | Bachelor's (Undergraduate) | First Professional | Master's | Doctorate | None | | | |
| **Physical Sciences** | | | | | | | | |
| General physical sciences | 77 | 1 | 23 | - | - | 160 | - | 160 |
| All other earth and physical sciences . . . . | 76 | - | 24 | - | - | 273 | 1 | 274 |
| Astronomy . . . . . . . . | 65 | - | 35 | - | - | 238 | 1 | 239 |
| Chemistry . . . . . . . . | 78 | - | 21 | - | - | 579 | 1 | 580 |
| Physics . . . . . . . . . | 65 | - | 34 | - | - | 499 | - | 499 |
| Geography . . . . . . . . | 62 | 1 | 37 | - | - | 548 | - | 548 |
| Geology and geophysics . | 66 | - | 33 | - | - | 493 | - | 493 |
| Oceanography . . . . . . | 56 | - | 43 | - | 1 | 169 | - | 169 |
| Metallurgy . . . . . . . | 67 | - | 32 | - | - | 200 | - | 200 |
| Meteorology . . . . . . . | 68 | - | 32 | - | - | 250 | - | 250 |
| Mathematics . . . . . . . | 68 | - | 32 | - | - | 518 | - | 518 |
| **Engineering** | | | | | | | | |
| All other engineering . . | 67 | - | 32 | - | 1 | 624 | 1 | 625 |
| Civil engineering . . . . | 73 | 1 | 26 | - | - | 666 | 1 | 667 |
| Chemical engineering . . | 71 | - | 28 | - | 1 | 723 | - | 723 |
| Electrical engineering . | 73 | - | 26 | - | 1 | 858 | 2 | 860 |
| Mechanical engineering . | 73 | - | 26 | - | - | 851 | 1 | 852 |
| **Life Sciences** | | | | | | | | |
| All other biology . . . . | 58 | 1 | 40 | - | 1 | 431 | 1 | 432 |
| Anatomy . . . . . . . . . | 60 | 10 | 29 | - | - | 238 | - | 238 |
| General biology . . . . . | 82 | - | 17 | - | - | 805 | 2 | 807 |
| Biochemistry . . . . . . | 71 | 4 | 24 | - | 1 | 521 | - | 521 |
| Botany . . . . . . . . . | 54 | - | 45 | - | - | 592 | - | 592 |
| Biophysics . . . . . . . | 70 | 2 | 28 | - | - | 203 | - | 203 |
| Genetics . . . . . . . . | 48 | - | 51 | - | - | 283 | - | 283 |
| Microbiology . . . . . . | 69 | 2 | 28 | - | - | 663 | 1 | 664 |
| Pathology . . . . . . . . | 20 | 61 | 18 | - | - | 118 | - | 118 |
| Pharmacology . . . . . . | 56 | 9 | 35 | - | - | 228 | - | 228 |
| Physiology . . . . . . . | 51 | 10 | 39 | - | - | 464 | - | 464 |
| Zoology . . . . . . . . . | 58 | - | 42 | - | - | 624 | 1 | 625 |
| Agriculture . . . . . . . | 59 | - | 41 | - | - | 472 | 1 | 473 |
| Forestry . . . . . . . . | 67 | - | 32 | - | - | 471 | 2 | 473 |
| **Behavioral Sciences** | | | | | | | | |
| Psychology . . . . . . . | 64 | 1 | 35 | - | - | 698 | - | 698 |
| Anthropology . . . . . . | 70 | 1 | 29 | - | - | 609 | - | 609 |
| Economics . . . . . . . . | 60 | 1 | 39 | - | - | 677 | 2 | 679 |
| Sociology . . . . . . . . | 62 | 2 | 36 | - | - | 559 | - | 559 |
| **Humanities** | | | | | | | | |
| English . . . . . . . . . | 71 | 1 | 28 | - | - | 515 | - | 515 |
| History . . . . . . . . . | 60 | 1 | 39 | - | - | 578 | - | 578 |
| **Social Work** | | | | | | | | |
| Social work . . . . . . . | 81 | 2 | 17 | - | - | 797 | 2 | 799 |

TABLE D.2

FIELD OF STUDY BY NEXT DEGREE EXPECTED

(Per Cent)

| Field of Study | Next Degree Expected | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| | Bachelor's (Undergraduate) | First Professional | Master's | Doctorate | None | | | |
| **Physical Sciences** | | | | | | | | |
| General physical sciences | 1 | 1 | 82 | 16 | 1 | 158 | 2 | 160 |
| All other earth and physical sciences . . | - | 1 | 60 | 39 | 1 | 274 | - | 274 |
| Astronomy . . . . . . . | - | - | 36 | 64 | - | 238 | 1 | 239 |
| Chemistry . . . . . . . . | - | 1 | 43 | 56 | - | 574 | 6 | 580 |
| Physics . . . . . . . . . | 1 | 1 | 47 | 52 | - | 499 | - | 499 |
| Geography . . . . . . . . | - | 1 | 62 | 36 | 1 | 539 | 9 | 548 |
| Geology and geophysics. | - | - | 53 | 46 | 1 | 492 | 1 | 493 |
| Oceanography . . . . . | 1 | - | 39 | 59 | 1 | 169 | - | 169 |
| Metallurgy . . . . . . | - | - | 60 | 40 | - | 200 | - | 200 |
| Meteorology . . . . . . | 2 | - | 60 | 35 | 2 | 248 | 2 | 250 |
| Mathematics . . . . . . | - | 1 | 63 | 34 | 2 | 515 | 3 | 518 |
| **Engineering** | | | | | | | | |
| All other engineering . | - | 1 | 63 | 34 | 2 | 622 | 3 | 625 |
| Civil engineering . . . | - | - | 73 | 25 | 2 | 667 | - | 667 |
| Chemical engineering . | 1 | - | 52 | 46 | 1 | 720 | 3 | 723 |
| Electrical engineering | 1 | 1 | 72 | 24 | 2 | 857 | 3 | 860 |
| Mechanical engineering | 1 | 1 | 72 | 24 | 2 | 846 | 6 | 852 |
| **Life Sciences** | | | | | | | | |
| All other biology . . . | - | 1 | 47 | 50 | 2 | 431 | 1 | 432 |
| Anatomy . . . . . . . . | - | 7 | 30 | 62 | - | 236 | 2 | 238 |
| General biology . . . . | - | 1 | 73 | 24 | 1 | 802 | 5 | 807 |
| Biochemistry . . . . . | - | 13 | 26 | 61 | 1 | 520 | 1 | 521 |
| Botany . . . . . . . . | - | - | 43 | 55 | 1 | 591 | 1 | 592 |
| Biophysics . . . . . . | - | 1 | 22 | 76 | - | 201 | 2 | 203 |
| Genetics . . . . . . . | - | - | 29 | 70 | - | 283 | - | 283 |
| Microbiology . . . . . | - | 11 | 51 | 37 | 1 | 661 | 3 | 664 |
| Pathology . . . . . . . | - | 8 | 39 | 45 | 9 | 116 | 2 | 118 |
| Pharmacology . . . . . | - | 4 | 25 | 70 | - | 225 | 3 | 228 |
| Physiology . . . . . . | - | 2 | 27 | 71 | - | 463 | 1 | 464 |
| Zoology . . . . . . . . | - | 1 | 47 | 51 | 1 | 622 | 3 | 625 |
| Agriculture . . . . . . | - | 1 | 54 | 44 | 1 | 470 | 3 | 473 |
| Forestry . . . . . . . | - | 1 | 60 | 38 | 1 | 470 | 3 | 473 |
| **Behavioral Sciences** | | | | | | | | |
| Psychology . . . . . . | - | - | 50 | 49 | - | 696 | 2 | 698 |
| Anthropology . . . . . | - | - | 50 | 50 | - | 602 | 7 | 609 |
| Economics . . . . . . . | - | - | 48 | 51 | 1 | 673 | 6 | 679 |
| Sociology . . . . . . . | - | 1 | 57 | 41 | 1 | 557 | 2 | 559 |
| **Humanities** | | | | | | | | |
| English . . . . . . . . . | - | 1 | 72 | 27 | - | 511 | 4 | 515 |
| History . . . . . . . . . | - | 2 | 59 | 38 | 2 | 576 | 2 | 578 |
| **Social Work** | | | | | | | | |
| Social work . . . . . . | - | 1 | 86 | 9 | 3 | 784 | 15 | 799 |

TABLE D.3

FIELD OF STUDY BY HIGHEST DEGREE EXPECTED

(Per Cent)

| Field of Study | Highest Degree Expected | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| | Bachelor's (Undergraduate) | First Professional | Master's | Doctorate | None | | | |
| **Physical Sciences** | | | | | | | | |
| General physical sciences | - | - | 37 | 63 | - | 157 | 3 | 160 |
| All other earth and physical sciences . . | - | 1 | 33 | 66 | - | 273 | 1 | 274 |
| Astronomy . . . . . . . | - | - | 6 | 94 | - | 236 | 3 | 239 |
| Chemistry . . . . . . . | - | 1 | 16 | 83 | - | 571 | 9 | 580 |
| Physics . . . . . . . . | - | - | 13 | 87 | - | 494 | 5 | 499 |
| Geography . . . . . . . | - | 1 | 23 | 76 | - | 529 | 19 | 548 |
| Geology and geophysics | - | - | 16 | 84 | - | 489 | 4 | 493 |
| Oceanography . . . . . | - | - | 9 | 90 | - | 169 | - | 169 |
| Metallurgy . . . . . . | - | - | 26 | 73 | - | 198 | 2 | 200 |
| Meteorology . . . . . . | - | - | 35 | 65 | - | 247 | 3 | 250 |
| Mathematics . . . . . . | - | 1 | 29 | 70 | - | 506 | 12 | 518 |
| **Engineering** | | | | | | | | |
| All other engineering . | - | 1 | 34 | 64 | - | 609 | 16 | 625 |
| Civil engineering . . . | - | 1 | 50 | 49 | - | 655 | 12 | 667 |
| Chemical engineering . | - | - | 27 | 73 | - | 718 | 5 | 723 |
| Electrical engineering | - | 1 | 44 | 54 | - | 838 | 22 | 860 |
| Mechanical engineering | 1 | 1 | 46 | 53 | - | 837 | 15 | 852 |
| **Life Sciences** | | | | | | | | |
| All other biology . . . | - | 1 | 15 | 84 | - | 425 | 7 | 432 |
| Anatomy . . . . . . . . | - | 11 | 8 | 81 | - | 237 | 1 | 238 |
| General biology . . . . | - | 2 | 27 | 71 | - | 785 | 22 | 807 |
| Biochemistry . . . . . | - | 13 | 6 | 81 | - | 519 | 2 | 521 |
| Botany . . . . . . . . | - | - | 10 | 89 | - | 578 | 14 | 592 |
| Biophysics . . . . . . | - | - | 3 | 96 | - | 202 | 1 | 203 |
| Genetics . . . . . . . | - | 1 | 6 | 93 | - | 283 | - | 283 |
| Microbiology . . . . . | 1 | 12 | 16 | 72 | - | 653 | 11 | 664 |
| Pathology . . . . . . . | - | 14 | 16 | 71 | - | 116 | 2 | 118 |
| Pharmacology . . . . . | - | 4 | 6 | 90 | - | 226 | 2 | 228 |
| Physiology . . . . . . | - | 4 | 5 | 91 | - | 459 | 5 | 464 |
| Zoology . . . . . . . . | - | 2 | 9 | 89 | - | 618 | 7 | 625 |
| Agriculture . . . . . . | - | 1 | 22 | 77 | - | 468 | 5 | 473 |
| Forestry . . . . . . . | - | - | 28 | 71 | - | 467 | 6 | 473 |
| **Behavioral Sciences** | | | | | | | | |
| Psychology . . . . . . | - | - | 9 | 91 | - | 687 | 11 | 698 |
| Anthropology . . . . . | - | - | 6 | 94 | - | 588 | 21 | 609 |
| Economics . . . . . . . | - | - | 20 | 79 | - | 673 | 6 | 679 |
| Sociology . . . . . . . | - | 1 | 17 | 82 | - | 554 | 5 | 559 |
| **Humanities** | | | | | | | | |
| English . . . . . . . . | - | 1 | 30 | 69 | - | 501 | 14 | 515 |
| History . . . . . . . . | 1 | 2 | 18 | 79 | - | 572 | 6 | 578 |
| **Social Work** | | | | | | | | |
| Social work . . . . . . | - | 1 | 66 | 33 | - | 753 | 46 | 799 |

TABLE D.4

FIELD OF STUDY BY ENROLLMENT STATUS

(Per Cent)

| Field of Study | Enrollment Status | | N | NA | Total N |
|---|---|---|---|---|---|
| | Full Time | Part Time | | | |
| **Physical Sciences** | | | | | |
| General physical sciences | 50 | 50 | 147 | 13 | 160 |
| All other earth and physical sciences | 55 | 45 | 266 | 8 | 274 |
| Astronomy | 73 | 27 | 231 | 8 | 239 |
| Chemistry | 64 | 36 | 562 | 18 | 580 |
| Physics | 63 | 37 | 483 | 16 | 499 |
| Geography | 60 | 40 | 523 | 25 | 548 |
| Geology and geophysics | 73 | 27 | 480 | 13 | 493 |
| Oceanography | 79 | 21 | 162 | 7 | 169 |
| Metallurgy | 37 | 63 | 195 | 5 | 200 |
| Meteorology | 76 | 24 | 240 | 10 | 250 |
| Mathematics | 50 | 50 | 500 | 18 | 518 |
| **Engineering** | | | | | |
| All other engineering | 51 | 49 | 612 | 13 | 625 |
| Civil engineering | 47 | 53 | 657 | 10 | 667 |
| Chemical engineering | 58 | 42 | 711 | 12 | 723 |
| Electrical engineering | 31 | 69 | 832 | 28 | 860 |
| Mechanical engineering | 36 | 64 | 831 | 21 | 852 |
| **Life Sciences** | | | | | |
| All other biology | 73 | 27 | 415 | 17 | 432 |
| Anatomy | 81 | 19 | 227 | 11 | 238 |
| General biology | 61 | 39 | 772 | 35 | 807 |
| Biochemistry | 90 | 10 | 507 | 14 | 521 |
| Botany | 69 | 31 | 573 | 19 | 592 |
| Biophysics | 90 | 10 | 193 | 10 | 203 |
| Genetics | 76 | 24 | 265 | 18 | 283 |
| Microbiology | 82 | 18 | 644 | 20 | 664 |
| Pathology | 60 | 40 | 116 | 2 | 118 |
| Pharmacology | 85 | 15 | 223 | 5 | 228 |
| Physiology | 82 | 18 | 443 | 21 | 464 |
| Zoology | 70 | 30 | 609 | 16 | 625 |
| Agriculture | 69 | 31 | 454 | 19 | 473 |
| Forestry | 76 | 24 | 455 | 18 | 473 |
| **Behavioral Sciences** | | | | | |
| Psychology | 69 | 31 | 677 | 21 | 698 |
| Anthropology | 69 | 31 | 585 | 24 | 609 |
| Economics | 60 | 40 | 658 | 21 | 679 |
| Sociology | 55 | 45 | 546 | 13 | 559 |
| **Humanities** | | | | | |
| English | 44 | 56 | 484 | 31 | 515 |
| History | 60 | 40 | 558 | 20 | 578 |
| **Social Work** | | | | | |
| Social work | 82 | 18 | 763 | 36 | 799 |

TABLE D.5

FIELD OF STUDY BY HOURS OF STUDY A WEEK

(Per Cent)

| Field of Study | Hours of Study a Week | | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | None | Less Than 10 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | More Than 69 | | | |
| **Physical Sciences** | | | | | | | | | | | | |
| General physical sciences . . . . . | 1 | 18 | 21 | 6 | 10 | 11 | 16 | 11 | 5 | 148 | 12 | 160 |
| All other earth and physical sciences | - | 18 | 17 | 7 | 7 | 17 | 15 | 11 | 7 | 271 | 3 | 274 |
| Astronomy . . . . . | 1 | 1 | 8 | 11 | 12 | 22 | 20 | 14 | 11 | 237 | 2 | 239 |
| Chemistry . . . . . | - | 9 | 12 | 10 | 9 | 15 | 19 | 15 | 12 | 576 | 4 | 580 |
| Physics . . . . . . | - | 6 | 15 | 10 | 12 | 15 | 19 | 14 | 9 | 492 | 7 | 499 |
| Geography . . . . . | - | 11 | 13 | 14 | 13 | 17 | 13 | 11 | 7 | 543 | 5 | 548 |
| Geology and geophysics | - | 2 | 10 | 9 | 9 | 13 | 20 | 21 | 15 | 492 | 1 | 493 |
| Oceanography . . . . | - | 1 | 5 | 7 | 13 | 19 | 24 | 17 | 15 | 167 | 2 | 169 |
| Metallurgy . . . . . | - | 16 | 21 | 17 | 11 | 10 | 11 | 10 | 5 | 199 | 1 | 200 |
| Meteorology . . . . | - | 2 | 7 | 13 | 12 | 17 | 23 | 16 | 10 | 248 | 2 | 250 |
| Mathematics . . . . | - | 15 | 17 | 13 | 13 | 18 | 12 | 7 | 5 | 513 | 5 | 518 |
| **Engineering** | | | | | | | | | | | | |
| All other engineering | - | 13 | 21 | 12 | 7 | 11 | 17 | 10 | 7 | 618 | 7 | 625 |
| Civil engineering . | - | 11 | 20 | 13 | 14 | 11 | 14 | 10 | 7 | 663 | 4 | 667 |
| Chemical engineering | - | 12 | 17 | 9 | 8 | 14 | 18 | 14 | 8 | 718 | 5 | 723 |
| Electrical engineering | - | 22 | 25 | 17 | 11 | 9 | 7 | 4 | 5 | 846 | 14 | 860 |
| Mechanical engineering | - | 17 | 27 | 15 | 9 | 12 | 8 | 8 | 3 | 847 | 5 | 852 |
| **Life Sciences** | | | | | | | | | | | | |
| All other biology. . | - | 3 | 7 | 11 | 9 | 14 | 22 | 22 | 12 | 429 | 3 | 432 |
| Anatomy . . . . . . | - | 3 | 5 | 9 | 9 | 13 | 16 | 24 | 22 | 237 | 1 | 238 |
| General biology . . | 1 | 8 | 13 | 13 | 9 | 13 | 16 | 14 | 14 | 794 | 13 | 807 |
| Biochemistry . . . . | - | 1 | 4 | 3 | 9 | 14 | 25 | 23 | 21 | 516 | 5 | 521 |
| Botany . . . . . . . | - | 4 | 7 | 9 | 15 | 12 | 20 | 17 | 16 | 590 | 2 | 592 |
| Biophysics . . . . . | - | 1 | 3 | 3 | 7 | 19 | 25 | 24 | 18 | 203 | - | 203 |
| Genetics . . . . . . | - | 3 | 7 | 8 | 9 | 18 | 19 | 18 | 17 | 279 | 4 | 283 |
| Microbiology . . . . | - | 3 | 10 | 8 | 8 | 22 | 16 | 17 | 17 | 662 | 2 | 664 |
| Pathology . . . . . | - | 7 | 14 | 16 | 9 | 13 | 11 | 14 | 16 | 116 | 2 | 118 |
| Pharmacology . . . . | - | 2 | 4 | 7 | 7 | 13 | 20 | 28 | 18 | 227 | 1 | 228 |
| Physiology . . . . . | - | 3 | 4 | 8 | 9 | 14 | 25 | 23 | 15 | 461 | 3 | 464 |
| Zoology . . . . . . | - | 3 | 9 | 11 | 14 | 17 | 20 | 14 | 12 | 623 | 2 | 625 |
| Agriculture . . . . | - | 7 | 11 | 7 | 11 | 13 | 17 | 22 | 11 | 461 | 12 | 473 |
| Forestry . . . . . . | - | 5 | 6 | 7 | 9 | 20 | 23 | 17 | 12 | 461 | 12 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | |
| Psychology . . . . . | - | 8 | 10 | 13 | 14 | 17 | 21 | 12 | 6 | 689 | 9 | 698 |
| Anthropology . . . . | - | 6 | 9 | 15 | 16 | 19 | 14 | 15 | 7 | 601 | 8 | 609 |
| Economics . . . . . | - | 9 | 13 | 15 | 12 | 16 | 15 | 12 | 6 | 669 | 10 | 679 |
| Sociology . . . . . | - | 10 | 15 | 14 | 14 | 15 | 14 | 12 | 5 | 554 | 5 | 559 |
| **Humanities** | | | | | | | | | | | | |
| English . . . . . . | - | 14 | 20 | 15 | 13 | 15 | 12 | 7 | 4 | 504 | 11 | 515 |
| History . . . . . . | - | 10 | 15 | 11 | 13 | 14 | 16 | 15 | 7 | 575 | 3 | 578 |
| **Social Work** | | | | | | | | | | | | |
| Social work . . . . | - | 9 | 8 | 9 | 14 | 21 | 23 | 13 | 4 | 788 | 11 | 799 |

TABLE D.6

FIELD OF STUDY BY YEARS ELAPSED BETWEEN RECEIPT OF BACHELOR'S DEGREE AND START OF GRADUATE STUDY

(Per Cent)

| Field of Study | Years Elapsed | | | | | | | N | Inap-plicable | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Less Than One | One | Two | Three | Four | Five to Nine | Ten or More | | | | |
| **Physical Sciences** | | | | | | | | | | | |
| General physical sciences | 46 | 12 | 10 | 9 | 3 | 10 | 10 | 156 | - | 4 | 160 |
| All other earth and physical sciences . . . . | 57 | 11 | 7 | 7 | 4 | 10 | 4 | 272 | 1 | 1 | 274 |
| Astronomy . . . . . . . . | 76 | 6 | 5 | 2 | 1 | 6 | 4 | 238 | 1 | - | 239 |
| Chemistry . . . . . . . . | 69 | 7 | 6 | 5 | 3 | 5 | 5 | 577 | - | 3 | 580 |
| Physics . . . . . . . . | 79 | 6 | 4 | 3 | 2 | 4 | 2 | 496 | 3 | - | 499 |
| Geography . . . . . . . . | 67 | 6 | 7 | 6 | 2 | 8 | 4 | 540 | 1 | 7 | 548 |
| Geology and geophysics . | 74 | 5 | 4 | 5 | 4 | 5 | 2 | 490 | 1 | 2 | 493 |
| Oceanography . . . . . . | 67 | 10 | 5 | 2 | 5 | 6 | 4 | 167 | 2 | - | 169 |
| Metallurgy . . . . . . | 63 | 8 | 5 | 6 | 4 | 12 | 2 | 200 | - | - | 200 |
| Meteorology . . . . . . | 47 | 7 | 7 | 5 | 8 | 20 | 5 | 237 | 2 | 11 | 250 |
| Mathematics . . . . . . | 67 | 8 | 5 | 5 | 4 | 6 | 4 | 512 | 2 | 4 | 518 |
| **Engineering** | | | | | | | | | | | |
| All other engineering . | 56 | 8 | 8 | 6 | 6 | 10 | 6 | 615 | 5 | 5 | 625 |
| Civil engineering . . . | 59 | 9 | 7 | 6 | 6 | 8 | 4 | 661 | 3 | 3 | 667 |
| Chemical engineering . | 67 | 8 | 8 | 6 | 3 | 5 | 2 | 711 | 8 | 4 | 723 |
| Electrical engineering | 63 | 10 | 7 | 5 | 4 | 8 | 4 | 839 | 13 | 8 | 860 |
| Mechanical engineering | 52 | 11 | 8 | 6 | 5 | 12 | 5 | 844 | 4 | 4 | 852 |
| **Life Sciences** | | | | | | | | | | | |
| All other biology . . . | 64 | 9 | 7 | 4 | 5 | 8 | 3 | 420 | 5 | 7 | 432 |
| Anatomy . . . . . . . . | 61 | 9 | 9 | 3 | 3 | 7 | 7 | 230 | 7 | 1 | 238 |
| General biology . . . . | 57 | 7 | 6 | 6 | 2 | 11 | 12 | 794 | 4 | 9 | 807 |
| Biochemistry . . . . . | 79 | 5 | 3 | 4 | 2 | 6 | 1 | 508 | 9 | 4 | 521 |
| Botany . . . . . . . . | 71 | 8 | 5 | 3 | 2 | 6 | 5 | 586 | 5 | 1 | 592 |
| Biophysics . . . . . . | 76 | 6 | 5 | 3 | 5 | 3 | 3 | 196 | 2 | 5 | 203 |
| Genetics . . . . . . . | 73 | 6 | 4 | 4 | 3 | 6 | 3 | 279 | 2 | 2 | 283 |
| Microbiology . . . . . | 65 | 6 | 9 | 4 | 4 | 5 | 7 | 653 | 7 | 4 | 664 |
| Pathology . . . . . . . | 51 | 5 | 9 | 3 | 8 | 17 | 7 | 103 | 14 | 1 | 118 |
| Pharmacology . . . . . | 62 | 9 | 8 | 6 | 6 | 7 | 3 | 217 | 5 | 6 | 228 |
| Physiology . . . . . . | 64 | 6 | 8 | 8 | 4 | 7 | 4 | 453 | 8 | 3 | 464 |
| Zoology . . . . . . . . | 75 | 7 | 5 | 5 | 3 | 3 | 2 | 617 | 4 | 4 | 625 |
| Agriculture . . . . . . | 64 | 5 | 8 | 7 | 4 | 10 | 4 | 468 | 2 | 3 | 473 |
| Forestry . . . . . . . | 61 | 6 | 7 | 7 | 3 | 9 | 6 | 467 | 2 | 4 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | |
| Psychology . . . . . . | 73 | 7 | 5 | 3 | 2 | 5 | 4 | 689 | 3 | 6 | 698 |
| Anthropology . . . . . | 64 | 8 | 6 | 4 | 3 | 8 | 7 | 600 | 2 | 7 | 609 |
| Economics . . . . . . . | 62 | 8 | 7 | 5 | 4 | 7 | 7 | 669 | 2 | 8 | 679 |
| Sociology . . . . . . . | 65 | 8 | 6 | 4 | 3 | 8 | 6 | 550 | 1 | 8 | 559 |
| **Humanities** | | | | | | | | | | | |
| English . . . . . . . . | 54 | 14 | 8 | 5 | 3 | 9 | 7 | 504 | 3 | 8 | 515 |
| History . . . . . . . . | 63 | 9 | 7 | 6 | 3 | 8 | 4 | 569 | 2 | 7 | 578 |
| **Social Work** | | | | | | | | | | | |
| Social work . . . . . . | 34 | 13 | 11 | 7 | 3 | 11 | 22 | 775 | 2 | 22 | 799 |

TABLE D.7

FIELD OF STUDY BY PROGRESS IN ADVANCED STUDY

(Per Cent)

| Field of Study | Progress in Advanced Study: Completed Less Than One Full Year of Work on Advanced Degree | One or More Years Work But No Doctorate by June, 1963 | All Doctoral Work Completed by June, 1963 | N | NA | Total N |
|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | |
| General physical sciences . | 55 | 45 | - | 154 | 6 | 160 |
| All other earth and physical sciences . . . . . . | 36 | 60 | 4 | 273 | 1 | 274 |
| Astronomy . . . . . . . . . | 22 | 73 | 5 | 239 | - | 239 |
| Chemistry . . . . . . . . . | 27 | 69 | 4 | 575 | 5 | 580 |
| Physics . . . . . . . . . . | 25 | 71 | 4 | 497 | 2 | 499 |
| Geography . . . . . . . . . | 28 | 71 | 1 | 540 | 8 | 548 |
| Geology and geophysics . . | 19 | 77 | 4 | 485 | 8 | 493 |
| Oceanography . . . . . . . | 17 | 82 | 2 | 169 | - | 169 |
| Metallurgy . . . . . . . . | 33 | 64 | 3 | 199 | 1 | 200 |
| Meteorology . . . . . . . . | 30 | 67 | 2 | 250 | - | 250 |
| Mathematics . . . . . . . . | 36 | 62 | 2 | 515 | 3 | 518 |
| **Engineering** | | | | | | |
| All other engineering . . . | 36 | 62 | 2 | 622 | 3 | 625 |
| Civil engineering . . . . . | 44 | 54 | 2 | 644 | 23 | 667 |
| Chemical engineering . . . | 36 | 62 | 2 | 716 | 7 | 723 |
| Electrical engineering . . | 45 | 54 | 2 | 848 | 12 | 860 |
| Mechanical engineering . . | 46 | 53 | 1 | 842 | 10 | 852 |
| **Life Sciences** | | | | | | |
| All other biology . . . . . | 24 | 72 | 4 | 429 | 3 | 432 |
| Anatomy . . . . . . . . . . | 21 | 75 | 4 | 238 | - | 238 |
| General biology . . . . . . | 39 | 60 | 2 | 796 | 11 | 807 |
| Biochemistry . . . . . . . | 20 | 74 | 6 | 521 | - | 521 |
| Botany . . . . . . . . . . | 23 | 73 | 4 | 592 | - | 592 |
| Biophysics . . . . . . . . | 15 | 82 | 3 | 203 | - | 203 |
| Genetics . . . . . . . . . | 21 | 73 | 6 | 280 | 3 | 283 |
| Microbiology . . . . . . . | 30 | 66 | 4 | 659 | 5 | 664 |
| Pathology . . . . . . . . . | 24 | 70 | 5 | 111 | 7 | 118 |
| Pharmacology . . . . . . . | 18 | 75 | 7 | 228 | - | 228 |
| Physiology . . . . . . . . | 16 | 79 | 5 | 461 | 3 | 464 |
| Zoology . . . . . . . . . . | 21 | 75 | 5 | 623 | 2 | 625 |
| Agriculture . . . . . . . . | 31 | 67 | 2 | 471 | 2 | 473 |
| Forestry . . . . . . . . . | 32 | 65 | 3 | 463 | 10 | 473 |
| **Behavioral Sciences** | | | | | | |
| Psychology . . . . . . . . | 27 | 68 | 4 | 693 | 5 | 698 |
| Anthropology . . . . . . . | 24 | 74 | 2 | 607 | 2 | 609 |
| Economics . . . . . . . . . | 32 | 65 | 3 | 676 | 3 | 679 |
| Sociology . . . . . . . . . | 32 | 65 | 2 | 557 | 2 | 559 |
| **Humanities** | | | | | | |
| English . . . . . . . . . . | 45 | 53 | 2 | 506 | 9 | 515 |
| History . . . . . . . . . . | 33 | 65 | 2 | 573 | 5 | 578 |
| **Social Work** | | | | | | |
| Social work . . . . . . . . | 36 | 62 | 2 | 776 | 23 | 799 |

TABLE D.8

FIELD OF STUDY BY UNDERGRADUATE GRADE POINT AVERAGE

(Per Cent)

| Field of Study | Undergraduate Grade Point Average | | | | | | | | | N | Inapplicable | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | A- | B+ | B | B- | C+ | C | C- | D+ or Less | | | | |
| **Physical Sciences** | | | | | | | | | | | | | |
| General physical sciences | 3 | 9 | 13 | 19 | 28 | 22 | 5 | - | - | 158 | 1 | 1 | 160 |
| All other earth and physical sciences . . . . | 7 | 11 | 23 | 16 | 24 | 14 | 5 | 1 | - | 271 | 3 | - | 274 |
| Astronomy . . . . . . . | 9 | 20 | 22 | 22 | 17 | 7 | 2 | 1 | * | 234 | 5 | - | 239 |
| Chemistry . . . . . . . | 5 | 15 | 22 | 20 | 16 | 16 | 5 | 1 | - | 576 | 4 | - | 580 |
| Physics . . . . . . . . | 8 | 25 | 26 | 19 | 14 | 7 | 2 | - | - | 490 | 9 | - | 499 |
| Geography . . . . . . . | 4 | 14 | 19 | 20 | 22 | 15 | 6 | 1 | - | 538 | 10 | - | 548 |
| Geology and geophysics | 3 | 5 | 19 | 19 | 25 | 21 | 7 | 1 | - | 480 | 13 | - | 493 |
| Oceanography . . . . . | 1 | 11 | 30 | 20 | 16 | 17 | 3 | 1 | - | 167 | 2 | - | 169 |
| Metallurgy . . . . . . | 2 | 11 | 26 | 19 | 25 | 12 | 7 | - | - | 198 | 2 | - | 200 |
| Meteorology . . . . . . | 3 | 16 | 23 | 21 | 18 | 14 | 3 | 1 | - | 243 | 7 | - | 250 |
| Mathematics . . . . . . | 7 | 21 | 23 | 21 | 18 | 7 | 2 | 1 | - | 510 | 8 | - | 518 |
| **Engineering** | | | | | | | | | | | | | |
| All other engineering . | 6 | 15 | 24 | 18 | 23 | 11 | 3 | 1 | - | 604 | 21 | - | 625 |
| Civil engineering . . . | 5 | 13 | 21 | 17 | 26 | 15 | 4 | 1 | - | 659 | 8 | - | 667 |
| Chemical engineering . | 8 | 20 | 28 | 16 | 18 | 8 | 2 | * | - | 711 | 12 | - | 723 |
| Electrical engineering | 6 | 18 | 26 | 18 | 20 | 10 | 3 | * | - | 841 | 19 | - | 860 |
| Mechanical engineering | 4 | 16 | 24 | 21 | 21 | 10 | 3 | * | - | 839 | 12 | 1 | 852 |
| **Life Sciences** | | | | | | | | | | | | | |
| All other biology . . . | 1 | 10 | 19 | 23 | 25 | 19 | 4 | * | - | 420 | 12 | - | 432 |
| Anatomy . . . . . . . . | 3 | 12 | 23 | 25 | 21 | 13 | 3 | - | * | 224 | 14 | - | 238 |
| General biology . . . | 2 | 12 | 21 | 19 | 21 | 18 | 6 | * | * | 793 | 13 | 1 | 807 |
| Biochemistry . . . . . | 6 | 16 | 24 | 21 | 19 | 11 | 3 | * | * | 503 | 18 | - | 521 |
| Botany . . . . . . . . | 3 | 11 | 20 | 20 | 21 | 18 | 7 | * | - | 578 | 14 | - | 592 |
| Biophysics . . . . . . | 6 | 18 | 32 | 20 | 16 | 6 | 2 | * | - | 196 | 7 | - | 203 |
| Genetics . . . . . . . | 6 | 20 | 26 | 22 | 16 | 7 | 3 | 1 | - | 276 | 7 | - | 283 |
| Microbiology . . . . . | 2 | 9 | 16 | 29 | 19 | 20 | 4 | * | - | 650 | 14 | - | 664 |
| Pathology . . . . . . . | 2 | 19 | 23 | 29 | 13 | 10 | 3 | - | - | 90 | 27 | 1 | 118 |
| Pharmacology . . . . . | 5 | 20 | 26 | 19 | 20 | 9 | 1 | - | - | 214 | 14 | - | 228 |
| Physiology . . . . . . | 4 | 15 | 23 | 22 | 18 | 14 | 3 | * | - | 445 | 19 | - | 464 |
| Zoology . . . . . . . . | 2 | 13 | 22 | 24 | 19 | 15 | 4 | * | * | 616 | 9 | - | 625 |
| Agriculture . . . . . . | 2 | 11 | 25 | 19 | 25 | 15 | 3 | * | - | 467 | 6 | - | 473 |
| Forestry . . . . . . . | 2 | 8 | 24 | 16 | 25 | 19 | 5 | 1 | - | 464 | 9 | - | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | |
| Psychology . . . . . . | 5 | 14 | 29 | 19 | 19 | 10 | 3 | 1 | - | 685 | 13 | - | 698 |
| Anthropology . . . . . | 6 | 20 | 27 | 20 | 14 | 11 | 2 | 1 | * | 594 | 15 | - | 609 |
| Economics . . . . . . . | 4 | 16 | 26 | 15 | 21 | 13 | 4 | * | - | 668 | 11 | - | 679 |
| Sociology . . . . . . . | 3 | 16 | 25 | 21 | 18 | 13 | 3 | 1 | * | 550 | 9 | - | 559 |
| **Humanities** | | | | | | | | | | | | | |
| English . . . . . . . . | 5 | 19 | 29 | 21 | 13 | 9 | 2 | * | - | 499 | 16 | - | 515 |
| History . . . . . . . . | 6 | 20 | 26 | 21 | 15 | 9 | 3 | 1 | - | 571 | 7 | - | 578 |
| **Social Work** | | | | | | | | | | | | | |
| Social work . . . . . . | 2 | 10 | 21 | 22 | 21 | 17 | 6 | 1 | * | 779 | 20 | - | 799 |

*Less than one-half of 1 per cent.

TABLE D.9

FIELD OF STUDY BY CURRENT FIELD OF STUDY

(Per Cent)

| Field of Study | Current Field of Study: General Physical Sciences | All Other Earth and Phy. Sci. | Astronomy | Chemistry | Physics | Geography | Geology and Geophysics | Oceanography | Metallurgy | Meteorology | Mathematics and Statistics | General and Other Engineer. | Aeronaut. Eng. | Civil Eng. | Chem. Eng. | Elect. Eng. | Eng. Sci., Phys, Mechanics | Industrial Eng. | Mechanical Eng. | Metallurg. Eng. | Mining Eng. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | | | | | | | | |
| Gen. physical sciences | 24 | 2 | | 11 | 7 | | 1 | 1 | | | 2 | | | | | | | | | | |
| All other earth and physical sciences . | 1 | 25 | | 14 | 8 | * | 1 | | * | | 9 | 4 | * | * | 9 | 5 | 16 | | * | | 1 |
| Astronomy . . . . . . | * | * | 97 | | * | * | | | | | | | | | | | * | | | | |
| Chemistry . . . . . . | * | | | 94 | | | * | | | | | | | | * | | | | | | |
| Physics . . . . . . . | * | * | * | * | 95 | | * | | | * | 1 | | | | * | * | 1 | | * | | |
| Geography . . . . . . | * | 1 | * | | | 94 | | | | | | | | | | | | | | | |
| Geology and geophysics | | 3 | | | | 1 | 92 | 1 | | 1 | * | | | | | | | | | | 2 |
| Oceanography . . . . | | | | 2 | | | 4 | 85 | | | | | | | | | | | | | |
| Metallurgy . . . . . | | | * | | * | | | | 52 | * | * | | | | * | | | | 1 | 43 | |
| Meteorology . . . . . | | | | | * | | * | 2 | | 96 | * | * | | | | | | | | * | |
| Mathematics . . . . . | | | * | * | 1 | | * | | | | 90 | | | | | 1 | * | * | * | | |
| **Engineering** | | | | | | | | | | | | | | | | | | | | | |
| All other engineering | | * | | 2 | 3 | | | * | 2 | * | 1 | 13 | 20 | 5 | 1 | 3 | 15 | 16 | 5 | 8 | 2 |
| Civil engineering . . | * | * | | | | | | | * | | * | 1 | * | 89 | * | | 7 | * | * | | * |
| Chemical engineering | * | | | * | | | | | 1 | | * | 1 | * | * | 94 | * | 1 | 1 | * | 1 | |
| Electrical engineering | * | | | | 1 | | | | | | * | 1 | | | | 94 | 2 | | 2 | | |
| Mechanical engineering | * | | | | * | | * | | * | | * | 2 | 1 | * | | * | 7 | 1 | 86 | 2 | |
| **Life Sciences** | | | | | | | | | | | | | | | | | | | | | |
| All other biology . . | | | | | | | | | | | | | | * | | | | | | | |
| Anatomy . . . . . . . | | | | | | | | | | | | | | | | | | | | | |
| General biology . . . | | | | | | * | | | | | | | | | | | | | * | | |
| Biochemistry . . . . | * | * | | 2 | | | | | | | * | | | | | | | | | | |
| Botany . . . . . . . | | * | | | | * | | | | | | | | | * | | | | | | |
| Biophysics . . . . . | * | | | * | 2 | | | | | | 1 | | | | | | | | | | |
| Genetics . . . . . . | | | | | | * | | | | | * | | | | | | | | | | |
| Microbiology . . . . | | | | | | | | | | | | | | * | | | | | | | |
| Pathology . . . . . . | | | | | | | | | | | | | | | | | | | | | |
| Pharmacology . . . . | 4 | | | * | | | | | | | | | | | | | | | | | |
| Physiology . . . . . | | | | * | * | | | | | | | | | | | | | | | | |
| Zoology . . . . . . . | * | * | | | | | * | | | | * | | | | | | | | | | |
| Agriculture . . . . . | | * | | | * | | | | | 1 | * | | | 1 | | | | | | | |
| Forestry . . . . . . | | * | | 5 | * | | | | | | * | 1 | | * | | | | | * | | |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | | | |
| Psychology . . . . . | | | | | | | | | | | * | | | | | | | | | | |
| Anthropology . . . . | | 2 | | | | | * | | | | | | | | | | | | | | |
| Economics . . . . . . | | | | | | | | | | | * | | | | | | | | | | |
| Sociology . . . . . . | | | | | | | | | | | | | | | | | | | | | |
| **Humanities** | | | | | | | | | | | | | | | | | | | | | |
| English . . . . . . . | | | | | | | | | | | | | | | | | | | | | |
| History . . . . . . . | | | | | * | | | | | | | | | | | | | | | | |
| **Social Work** | | | | | | | | | | | | | | | | | | | | | |
| Social work . . . . . | | | | | | | | | | | | | | | | | | | * | | |

*Less than one-half of 1 per cent.

TABLE D.9--Continued

| Field of Study | Current Field of Study: All Other Biological Sciences | Anatomy, Histology | Gen. Biology | Biochemistry | Gen. Botany | Biophysics | Entomology | Genetics | Microbiology | Pathology | Pharmacology | Physiology | Zoology | Agriculture | Forestry | All Other Health Fields |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | | | |
| General physical sciences . . . . . | 2 | | 2 | | 1 | | | | | | | 1 | 1 | | | |
| All other earth and physical sciences | | | | | * | * | | | | | | 1 | | | | 1 |
| Astronomy . . . . . | | | | | | | | | | | | | | | | |
| Chemistry . . . . . | | | | 2 | | | | | | | | | | | | * |
| Physics . . . . . . | | | | * | | | | | | | | | | | | * |
| Geography . . . . . | | | | | | | | | | | | * | | | | |
| Geology and geophysics | * | | | | | | | | | | | | | | | |
| Oceanography . . . . | 6 | | 1 | | | | | | 1 | | | 1 | | | | |
| Metallurgy . . . . . | | | | | | | | | | | | | | | | |
| Meteorology . . . . | | | | | | | | | | | | | | | | |
| Mathematics . . . . | | | | * | | | | | | | | | | | | |
| **Engineering** | | | | | | | | | | | | | | | | |
| All other engineering | | | | | | | | | | | | | | | | * |
| Civil engineering . | | | | | | | | | | | | * | | | | |
| Chemical engineering | | | | | | | | | | | | | | | | |
| Electrical engineering | | | | | | | | | | | | | | | | |
| Mechanical engineering | | | | | | * | | | | | | | | | | |
| **Life Sciences** | | | | | | | | | | | | | | | | |
| All other biology. . | 34 | * | 2 | 2 | 3 | 1 | 35 | * | 4 | | | 5 | 3 | 3 | | 1 |
| Anatomy . . . . . . | 5 | 85 | | | | | | | | | 1 | 2 | 1 | | | 5 |
| General biology . . | 16 | * | 34 | 5 | 2 | 1 | 1 | 5 | 9 | | * | 12 | 3 | | | * |
| Biochemistry . . . . | 1 | * | * | 84 | | 1 | | | 1 | | | * | | * | | 11 |
| Botany . . . . . . . | 27 | * | 1 | * | 53 | * | 1 | 1 | 6 | | | 7 | * | 3 | | * |
| Biophysics . . . . . | 2 | | * | 4 | | 85 | * | 1 | * | | | * | | | | 1 |
| Genetics . . . . . . | 1 | | * | 2 | 1 | * | | 77 | 1 | | | * | 2 | 12 | * | |
| Microbiology . . . . | * | | * | * | | | | | 88 | 1 | * | | | | | 10 |
| Pathology . . . . . | 2 | 1 | | | 1 | | | | 4 | 62 | | | | | | 30 |
| Pharmacology . . . . | | * | | 2 | | | | | * | | 82 | * | | | | 10 |
| Physiology . . . . . | 1 | * | 1 | 8 | * | 2 | | | 1 | | * | 82 | * | 1 | | 2 |
| Zoology . . . . . . | 27 | 1 | 1 | 1 | | * | 2 | 4 | 5 | | | 8 | 49 | | | |
| Agriculture . . . . | 5 | | | 1 | * | * | | 3 | 1 | | | 3 | * | 80 | * | 1 |
| Forestry . . . . . . | 15 | * | * | * | * | | 1 | 1 | * | * | | 1 | 1 | 6 | 60 | |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | |
| Psychology . . . . . | | | | * | | | | | | | | * | * | | | |
| Anthropology . . . . | | | | | | | | * | | | | | | | | |
| Economics . . . . . | | | | | | | | | | | | | | 7 | | * |
| Sociology . . . . . | | | | | | | | | | | | | | | | * |
| **Humanities** | | | | | | | | | | | | | | | | |
| English . . . . . . | | | | | | | | | | | | | * | | | * |
| History . . . . . . | | | | | | | | | | | | | | | | |
| **Social Work** | | | | | | | | | | | | | | | | |
| Social work . . . . | | | | | | | | | | | | | | | | * |

*Less than one-half of 1 per cent.

TABLE D.9--Continued

| Field of Study | Current Field of Study: Psychology | General and Other Social Sciences | Anthropology | Economics | Area, Regional Studies | Political Science Foreign Service | Sociology | General Arts, Fine and Applied | English and Journalism | Classics and Classical Lang. | History | Linguistics, Lang., Philology | Philosophy | Communications | Social Work | All Other Fields | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Science** | | | | | | | | | | | | | | | | | | | |
| General physical sciences | 1 | | | | | | | | | | | | | | | 44 | 159 | 1 | 160 |
| All other earth and physical sciences . . . . . | | | | | | | | | | | | | | | | 2 | 274 | - | 274 |
| Astronomy . . . . . . . . | | | | | | * | | | | | | | | | | * | 239 | - | 239 |
| Chemistry . . . . . . . . | | | | | | | | | | | | | | | | 3 | 580 | - | 580 |
| Physics . . . . . . . . . | | | | | | | | | * | | | | * | | | 1 | 499 | - | 499 |
| Geography . . . . . . . . | * | 1 | | | 2 | * | | | | | * | | 1 | | | 1 | 545 | 3 | 548 |
| Geology and geophysics . | | | | | | | | | * | | | | | | | * | 490 | 3 | 493 |
| Oceanography . . . . . . | | | | 1 | | | | | | | | | | | | 1 | 169 | - | 169 |
| Metallurgy . . . . . . . | | | | | | | | | | | * | | | | | * | 200 | - | 200 |
| Meteorology . . . . . . . | | | | | | | | * | | | | | | | | | 248 | 2 | 250 |
| Mathematics . . . . . . . | * | | | | | | | | | | | | * | | | 5 | 514 | 4 | 518 |
| **Engineering** | | | | | | | | | | | | | | | | | | | |
| All other engineering . . | | | | | | | | | | | | * | | | | 3 | 622 | 3 | 625 |
| Civil engineering . . . . | | * | | | * | | | | | | | | | | | * | 665 | 2 | 667 |
| Chemical engineering . . | | | | | | | | | | | | | | | | * | 723 | - | 723 |
| Electrical engineering . | | | | | | | | | | | | | | | | * | 858 | 2 | 860 |
| Mechanical engineering . | | | | * | | | | | | | | | | | | | 852 | - | 852 |
| **Life Sciences** | | | | | | | | | | | | | | | | | | | |
| All other biology . . . . | | | | | | | | | | | * | | * | | | 6 | 430 | 2 | 432 |
| Anatomy . . . . . . . . . | | | * | | | | | | | | | | | | | | 237 | 1 | 238 |
| General biology . . . . . | * | | | | | | | | | | * | | | | | 12 | 804 | 3 | 807 |
| Biochemistry | | | | | | | | | | | | | | | | * | 521 | - | 521 |
| Botany . . . . . . . . . | | | | | | | | | | | | | | | | 1 | 591 | 1 | 592 |
| Biophysics . . . . . . . | | | | | | | | | | | * | | | | | | 203 | - | 203 |
| Genetics . . . . . . . . | | | 1 | | | | | | | | | * | | | | | 281 | 2 | 283 |
| Microbiology. . . . . . . | | | | | | | | | | | | | | | | * | 663 | 1 | 664 |
| Pathology . . . . . . . . | | | | | | | | | | | | | | | | 1 | 115 | 3 | 118 |
| Pharmacology . . . . . . | | | | | | | | | | | | | | | | | 228 | - | 228 |
| Physiology . . . . . . . | 1 | | | | | | | | | | | | * | | | | 464 | - | 464 |
| Zoology . . . . . . . . . | | | * | | | | | | | | | | | | | 1 | 625 | - | 625 |
| Agriculture . . . . . . . | | * | | * | | * | | | | | | | | | | 2 | 473 | - | 473 |
| Forestry . . . . . . . . | * | | | 2 | | | | | | | | | | | * | 4 | 473 | - | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | |
| Psychology . . . . . . . | 97 | | * | | | | * | * | | | * | | | | | 1 | 696 | 2 | 698 |
| Anthropology . . . . . . | * | | 94 | * | | | 1 | * | | * | * | * | | | | 1 | 609 | - | 609 |
| Economics . . . . . . . . | 1 | * | * | 84 | | * | * | | * | | * | | | | * | 6 | 678 | 1 | 679 |
| Sociology . . . . . . . . | 2 | 1 | 2 | * | | | 93 | | * | | | | | * | * | 1 | 557 | 2 | 559 |
| **Humanities** | | | | | | | | | | | | | | | | | | | |
| English . . . . . . . . . | | * | | | | | | * | 86 | | 1 | 1 | | | | 11 | 513 | 2 | 515 |
| History . . . . . . . . . | | 1 | | | * | * | 1 | * | | | 89 | * | * | | | 8 | 578 | - | 578 |
| **Social Work** | | | | | | | | | | | | | | | | | | | |
| Social work . . . . . . . | 1 | 1 | | | | | * | | | | * | | | | 97 | * | 797 | 2 | 799 |

*Less than one-half of 1 per cent.

TABLE D.10

FIELD OF STUDY BY UNDERGRADUATE FIELD OF STUDY

(Per Cent)

| Field of Study | Undergraduate Field of Study: Physical Science | Engineering | Life Sciences | Behavioral Sciences | Humanities | Social Work | All Other (Miscellaneous) | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | |
| General physical sciences . | 44 | 2 | 14 | 2 | 1 | - | 37 | 158 | 2 | 160 |
| All other earth and physical sciences . . . . . . | 50 | 44 | 1 | * | * | - | 4 | 272 | - | 274 |
| Astronomy . . . . . . . . . | 85 | 13 | * | * | 1 | - | 1 | 239 | - | 239 |
| Chemistry . . . . . . . . | 91 | 4 | 2 | - | * | - | 3 | 580 | - | 580 |
| Physics . . . . . . . . . . | 83 | 15 | * | - | 1 | - | 1 | 498 | 1 | 499 |
| Geography . . . . . . . . . | 57 | 2 | 2 | 17 | 8 | - | 14 | 545 | 3 | 548 |
| Geology and geophysics . . | 88 | 7 | 1 | 2 | 1 | - | 2 | 489 | 4 | 493 |
| Oceanography . . . . . . . | 58 | 12 | 24 | 1 | 1 | - | 4 | 169 | - | 169 |
| Metallurgy . . . . . . . . | 24 | 75 | - | - | - | - | 2 | 199 | 1 | 200 |
| Meteorology . . . . . . . . | 72 | 17 | 4 | 1 | 1 | - | 5 | 249 | 1 | 250 |
| Mathematics . . . . . . . . | 74 | 12 | 1 | 2 | 3 | - | 8 | 514 | 4 | 518 |
| **Engineering** | | | | | | | | | | |
| All other engineering . . . | 13 | 84 | * | - | * | - | 2 | 621 | 4 | 625 |
| Civil engineering . . . . . | 3 | 94 | * | * | - | - | 2 | 667 | - | 667 |
| Chemical engineering . . . | 4 | 96 | * | - | - | - | * | 722 | 1 | 723 |
| Electrical engineering . . | 4 | 95 | - | * | * | - | 1 | 858 | 2 | 860 |
| Mechanical engineering . . | 2 | 97 | - | * | - | - | * | 851 | 1 | 852 |
| **Life Sciences** | | | | | | | | | | |
| All other biology . . . . . | 3 | 1 | 79 | 2 | 2 | - | 14 | 430 | 2 | 432 |
| Anatomy . . . . . . . . . . | 5 | - | 73 | 5 | 4 | - | 13 | 238 | - | 238 |
| General biology . . . . . . | 6 | * | 71 | 1 | 6 | - | 16 | 804 | 3 | 807 |
| Biochemistry . . . . . . . | 59 | 2 | 31 | 2 | 2 | - | 5 | 517 | 4 | 521 |
| Botany . . . . . . . . . . | 6 | * | 84 | * | 2 | - | 7 | 590 | 2 | 592 |
| Biophysics . . . . . . . . | 65 | 9 | 23 | - | 2 | - | 1 | 203 | - | 203 |
| Genetics . . . . . . . . . | 5 | 1 | 88 | 1 | 2 | - | 3 | 280 | 3 | 283 |
| Microbiology . . . . . . . | 8 | * | 84 | 1 | 2 | - | 5 | 642 | 22 | 664 |
| Pathology . . . . . . . . . | 16 | - | 44 | 2 | 4 | - | 33 | 111 | 7 | 118 |
| Pharmacology . . . . . . . | 17 | 1 | 27 | 1 | 1 | - | 52 | 227 | 1 | 228 |
| Physiology . . . . . . . . | 17 | 3 | 64 | 2 | 4 | - | 9 | 461 | 3 | 464 |
| Zoology . . . . . . . . . . | 4 | * | 88 | 1 | 1 | - | 5 | 625 | - | 625 |
| Agriculture . . . . . . . . | 4 | 1 | 87 | 1 | * | - | 7 | 473 | - | 473 |
| Forestry . . . . . . . . . | 6 | 1 | 88 | 1 | 1 | - | 3 | 473 | - | 473 |
| **Behavioral Sciences** | | | | | | | | | | |
| Psychology . . . . . . . . | 4 | 2 | 2 | 74 | 11 | - | 7 | 695 | 3 | 698 |
| Anthropology . . . . . . . | 7 | 1 | 2 | 62 | 22 | * | 6 | 608 | 1 | 609 |
| Economics . . . . . . . . . | 6 | 3 | 13 | 49 | 6 | - | 24 | 676 | 3 | 679 |
| Sociology . . . . . . . . . | 3 | * | 2 | 68 | 12 | 1 | 13 | 557 | 2 | 559 |
| **Humanities** | | | | | | | | | | |
| English . . . . . . . . . . | 2 | - | 1 | 3 | 80 | - | 14 | 509 | 6 | 515 |
| History . . . . . . . . . . | 1 | * | 1 | 14 | 69 | * | 13 | 577 | 1 | 578 |
| **Social Work** | | | | | | | | | | |
| Social work . . . . . . . . | 2 | * | 2 | 55 | 17 | 8 | 17 | 796 | 3 | 799 |

*Less than one-half of 1 per cent.





TABLE D. 11

FIELD OF STUDY BY FIELD OF MASTER'S DEGREE

(Per Cent)

| Field of Study | Field of Master's Degree: General Physical Sciences | All Other Earth and Phy. Sci. | Astronomy | Chemistry | Physics | Geography | Geol., Geophys. | Oceanography | Metallurgy | Meteorology | Math., Statistics | General and Other Engineer. | Aeronautical Eng | Civil Engineering | Chemical Eng. | Electrical Eng. | Eng. Sci., Phys., Mechanics | Industrial Eng. | Mechanical Eng. | Metallurgical Eng | Mining Eng. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | | | | | | | | |
| General physical sciences . . . . | 11 | 3 | | 3 | 3 | | | 3 | | | 3 | | | | | | | | | | |
| All other earth and physical sciences | | 14 | | 17 | 14 | | 12 | | | | 3 | | 2 | 2 | 11 | 11 | 5 | | 2 | 2 | 5 |
| Astronomy . . . . | | | 60 | | 22 | | | | | | 9 | | 4 | | | | 1 | | | | |
| Chemistry . . . . | | 1 | | 85 | | | 1 | | | | | | | | 3 | | | | | | |
| Physics . . . . . | | | | 1 | 86 | | | | | 1 | 1 | 1 | | | 1 | 6 | 1 | | 1 | | |
| Geography . . . . | | 1 | | | | 74 | 2 | | | | | | | 1 | | | | | | | |
| Geology and geophysics . . . . | | 2 | | 1 | 1 | | 89 | 1 | | 1 | 1 | | | 1 | | | | | | | 2 |
| Oceanography . . . | 1 | 1 | | 3 | 7 | | 18 | 31 | | | 4 | | | 1 | 1 | 1 | 1 | | 1 | | |
| Metallurgy . . . . | | | | 2 | 6 | | | | 40 | | 2 | 2 | | | | | 2 | | 2 | 43 | |
| Meteorology . . . | 1 | | | 1 | 5 | 1 | | | | 81 | 2 | | 1 | | 1 | | | | 1 | | |
| Mathematics . . . | | | | 1 | 2 | | 1 | | | | 75 | | | | 2 | 4 | 1 | 1 | 1 | | 1 |
| **Engineering** | | | | | | | | | | | | | | | | | | | | | |
| All other engineering | | 1 | | 2 | 5 | | | | 2 | | 3 | 6 | 24 | 7 | 3 | 8 | 10 | 6 | 11 | 7 | 1 |
| Civil engineering | 1 | | | | | | 1 | | | | 1 | 1 | 1 | 85 | | | 9 | | 1 | | |
| Chemical engineering | | | | 1 | | | | | | | | 2 | | | 90 | 1 | | | | 1 | 1 |
| Electrical engineering | | | | | 1 | | | | | | 4 | 1 | | | | 87 | 4 | | 3 | | |
| Mechanical engineering | | | | | 2 | | | | | | | 5 | 4 | 1 | 1 | 1 | 7 | | 77 | | |
| **Life Sciences** | | | | | | | | | | | | | | | | | | | | | |
| All other biology | | | | | | | | | | | | | | | | | | | | | |
| Anatomy . . . . . | | 1 | | | | | 1 | | | | | | | | | | | | | | |
| General biology . | | | | 1 | | | | | | | | | | | | 1 | | | | | |
| Biochemistry . . . | 2 | | | 24 | 2 | | | 1 | | | | | | | 1 | | | | | | |
| Botany . . . . . . | | | | | | | | | | | | | | | | 1 | | | | | |
| Biophysics . . . . | 2 | | | 4 | 23 | | | | | | 4 | | | | 2 | 4 | | | | | |
| Genetics . . . . . | | | | | | 1 | | | | | 1 | | | | | | | | | | |
| Microbiology . . . | | | | 1 | | | | | | | | | | 1 | | | | | | | |
| Pathology . . . . | | | | | | | | | | | | | | | | | | | | | |
| Pharmacology . . . | 4 | | | 2 | | | | | | | | | | | | | | | | | |
| Physiology . . . . | | 1 | | 1 | 1 | | | | | | | | | | | 2 | | | | | |
| Zoology . . . . . | | | | | 1 | | 1 | | | | | | | | | | | | | | |
| Agriculture . . . | | | | 2 | 1 | | | | | 1 | | | | | 1 | | | | | | |
| Forestry . . . . . | | 1 | | 4 | | | | | | 1 | | 3 | | 1 | | | | | 1 | | |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | | | | | | |
| Psychology . . . . | | | | | | | | | | | | | | | | | | | | | |
| Anthropology . . . | | 2 | | | 1 | 1 | 4 | | | | | | | | | 1 | | | | | |
| Economics . . . . | | | | | | | | | | | | | | | | | | 1 | | | |
| Sociology . . . . | | | | | | | | | | | | | | | | | | | | | |
| **Humanities** | | | | | | | | | | | | | | | | | | | | | |
| English . . . . . | | | | | 1 | | | | | | | | | | | | | | | | |
| History . . . . . | | | | | | | | | | | | | | | | 1 | | | | | |
| **Social Work** | | | | | | | | | | | | | | | | | | | | | |
| Social work . . . | | | | | | | | | | | | | | | | | | | | | |

TABLE D.11--Continued

| Field of Study | Field of Master's Degree | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All Other Biological Sciences | Anatomy, Histology | General Biology | Biochemistry | General Botany | Biophysics | Entomology | Genetics | Microbiology | Pathology | Pharmacology | Physiology | Zoology | Agriculture | Forestry | All Other Health Fields |
| **Physical Sciences** | | | | | | | | | | | | | | | | |
| General physical sciences . . . . | 3 | | 3 | | | | | | | | | | 3 | | | |
| All other earth and physical sciences | | | | | | | | | | | | | | | | |
| Astronomy . . . . | | | | | | | | | | | | | | | 1 | |
| Chemistry . . . . | | | | | 1 | | | | | | | | | 1 | | |
| Physics . . . . . | | | | | | | | | | | | | | | | |
| Geography . . . . | | | | | | | | | | | | | | | 1 | 1 |
| Geology and geophysics . . . . | 1 | | | | | | | | | | | | 1 | | | |
| Oceanography . . . | 8 | | 5 | 1 | | | | | 3 | | | | 5 | | | |
| Metallurgy . . . . | | | | 2 | | | | | | | | | | | | |
| Meteorology . . . | | | | | | | | | | | | | | 1 | | 1 |
| Mathematics . . . | 1 | | | | | | | | | | | | | 1 | | |
| **Engineering** | | | | | | | | | | | | | | | | |
| All other engineering . . . . . . | | | | | | | | | | | | | | | | |
| Civil engineering | 1 | | | | | | | | | | | | | | | |
| Chemical engineering | | | | | | | | | | | | | | | | |
| Electrical engineering . . . . . . | | | | | | | | | | | | | | | | |
| Mechanical engineering . . . . . . | | | | | | | | | | | | | | | | |
| **Life Sciences** | | | | | | | | | | | | | | | | |
| All other biology | 21 | | 3 | 1 | 4 | 1 | 34 | 1 | 6 | | | 3 | 7 | 7 | 1 | 1 |
| Anatomy . . . . . | 3 | 41 | 4 | | | | | | 5 | | | 4 | 21 | | | 10 |
| General biology . | 10 | | 34 | 3 | 8 | | 1 | 4 | 8 | | | 8 | 13 | | 1 | |
| Biochemistry . . . | 6 | | | 51 | 1 | 2 | | 1 | 2 | | | | 1 | 5 | | 2 |
| Botany . . . . . . | 16 | | 13 | | 43 | | | | 3 | | | 4 | 3 | 7 | 2 | |
| Biophysics . . . . | 9 | | 2 | 7 | 2 | 36 | | | 2 | | | 2 | | | | 2 |
| Genetics . . . . . | 2 | | 8 | 1 | 6 | | | 34 | 2 | | | | 10 | 31 | 1 | |
| Microbiology . . . | 4 | | 6 | 3 | | | 1 | 1 | 74 | | | 1 | 4 | 2 | | 3 |
| Pathology . . . . | 8 | 4 | 4 | 4 | 4 | | | 4 | 12 | 32 | | | | | | 28 |
| Pharmacology . . . | | | | 6 | | | | | 1 | | 58 | 11 | | | | 15 |
| Physiology . . . | 6 | 1 | 11 | 7 | | 2 | | | 3 | 1 | 1 | 43 | 7 | 7 | | 2 |
| Zoology . . . . . | 12 | 1 | 16 | | 1 | | 2 | 3 | 3 | | | 2 | 51 | 3 | | |
| Agriculture . . . | 4 | | | 1 | 1 | | | 2 | 2 | | | 4 | | 82 | | 1 |
| Forestry . . . . . | 13 | | | | 1 | | 1 | | 1 | | | 1 | 2 | 6 | 61 | |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | |
| Psychology . . . . | | | | | | | | | | | | | | | | |
| Anthropology . . . | | | | 1 | | | | | | | | | 1 | | | 6 |
| Economics . . . . | | | | | | | | | | | | | | 6 | 2 | 1 |
| Sociology . . . . | | | | | | | | | | | | | | | | 5 |
| **Humanities** | | | | | | | | | | | | | | | | |
| English . . . . . | | | | | | | | | | | | | | | | |
| History . . . . . | | | | | | | | | | | | | | | | |
| **Social Work** | | | | | | | | | | | | | | | | |
| Social work . . . | | | | | | | | | | | | | | | | 1 |

TABLE D.11--Continued

| Field of Study | Field of Master's Degree: Psychology | General and Other Social Sciences | Anthropology | Economics | Area, Regional Studies | Political Science, Foreign Service | Sociology | General Arts, Fine and Applied | English and Journalism | Classics and Classical Lang. | History | Linguistics, Lang., Philology | Philosophy | Communications | Social Work | All Other Fields | N | Not Applicable | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Physical Sciences | | | | | | | | | | | | | | | | | | | | |
| General physical sciences . . . | | | | | | | | | | | | | | | | 66 | 35 | 124 | 1 | 160 |
| All other earth and phy. sci. | | | | | | | | | | | | | | | | 3 | 65 | 209 | - | 274 |
| Astronomy . . . | 1 | | | | | | | | | | | | | | | 1 | 85 | 154 | - | 239 |
| Chemistry . . . | | | | | | | | | 1 | | | | | | | 7 | 124 | 456 | - | 580 |
| Physics . . . . | | | | | | | | | | | | | 1 | | | 1 | 172 | 327 | - | 499 |
| Geography . . . | | 2 | | 1 | | 2 | | | | | 2 | | | | | 8 | 205 | 343 | - | 548 |
| Geology and geophysics . . . | | | | | | | | | | | | | | | | 1 | 163 | 329 | 1 | 493 |
| Oceanography . . | | | | 1 | | | | | | | | | | | | 3 | 73 | 96 | - | 169 |
| Metallurgy . . . | | | | 2 | | | | | | | | | | | | | 65 | 135 | - | 200 |
| Meteorology . . | | | | | | | | 1 | | | | | | | | | 80 | 170 | - | 250 |
| Mathematics . . | 1 | 1 | | 1 | | | | | 1 | | | | 2 | | | 7 | 163 | 353 | 2 | 518 |
| Engineering | | | | | | | | | | | | | | | | | | | | |
| All other engineering . . . | | | | | | | | | | | | | | | | 2 | 202 | 422 | 1 | 625 |
| Civil engineering | | 1 | | | | | | | | | | | | | | 1 | 169 | 497 | 1 | 667 |
| Chemical engineering . . . | | | | | | | | | | | | | | | | | 201 | 522 | - | 723 |
| Electrical engineering . . . | | | | | | | | | | | | | | | | 1 | 223 | 636 | 1 | 860 |
| Mechanical engineering . . . | | | | | | | | | | | | | | | | | 224 | 627 | 1 | 852 |
| Life Sciences | | | | | | | | | | | | | | | | | | | | |
| All other biology | | | | 2 | | | | | | | | | | | | 9 | 175 | 256 | 1 | 432 |
| Anatomy . . . . | 1 | | 1 | | | | | | | | 1 | | | | | 5 | 173 | 165 | - | 238 |
| General biology | 1 | | | | | | | | | | 1 | | | | | 8 | 133 | 673 | 1 | 807 |
| Biochemistry . . | | | | | | | | | | | | | | | | 2 | 123 | 396 | 2 | 521 |
| Botany . . . . . | | | | | | | | | | | | | | | | 8 | 266 | 324 | 2 | 592 |
| Biophysics . . . | | | | | | | | | | | | | | | | 2 | 56 | 147 | - | 203 |
| Genetics . . . . | | | | | | | | | | | | | | | | 4 | 143 | 139 | 1 | 283 |
| Microbiology . . | | | | | | | | | | | | | | | | 2 | 192 | 471 | 1 | 664 |
| Pathology . . . | | | | | | | | | | | | | | | | | 25 | 91 | 2 | 118 |
| Pharmacology . . | | | | | 1 | | | | | | | | | | | 1 | 84 | 143 | 1 | 228 |
| Physiology . . . | | | | | | | | | 1 | | | | 2 | | | 3 | 188 | 276 | - | 464 |
| Zoology . . . . | | | | | | | | | | | | | | | | 4 | 258 | 366 | 1 | 625 |
| Agriculture . . | | | | 1 | | | | | | | | | | | | 1 | 190 | 281 | 2 | 473 |
| Forestry . . . . | | | | 3 | | | | | | | | | | | | 3 | 152 | 320 | 1 | 473 |
| Behavioral Science | | | | | | | | | | | | | | | | | | | | |
| Psychology . . . | 88 | | | | | | 1 | | | | 1 | | 1 | | | 5 | 242 | 454 | 2 | 698 |
| Anthropology . . | 1 | 1 | 63 | | | | 1 | | 1 | | 2 | 2 | 2 | | 4 | 8 | 178 | 431 | - | 609 |
| Economics . . . | 1 | 2 | | 62 | | 1 | | | 1 | | 1 | | 1 | | | 21 | 262 | 416 | 1 | 679 |
| Sociology . . . | 12 | 3 | 2 | | | 1 | 60 | | 1 | | 2 | | | | 4 | 8 | 200 | 357 | 2 | 559 |
| Humanities | | | | | | | | | | | | | | | | | | | | |
| English . . . . | 1 | | | | | | | 1 | 84 | | 1 | 2 | | | | 10 | 144 | 371 | - | 515 |
| History . . . . | | | | | 2 | 1 | | | | | 80 | | | | | 13 | 229 | 348 | 1 | 578 |
| Social Work | | | | | | | | | | | | | | | | | | | | |
| Social work . . | 8 | 4 | | 1 | | 1 | 2 | | | | 3 | | | | 65 | 16 | 139 | 659 | 1 | 799 |

TABLE D.12

FIELD OF STUDY BY ANTICIPATED CAREER FIELD

(Per Cent)

| Field of Study | Same | | Other Composite Fields | | | | | | All Other | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Detailed Field | Composite Field | Physical Science | Engineering | Life Sciences | Behavioral Science | Humanities | Social Work | All Other (Miscellaneous) | All Other (Health) | | | |
| **Physical Sciences** | | | | | | | | | | | | | |
| General physical sciences | 8 | 21 | - | 1 | 8 | 3 | - | - | 58 | 1 | 155 | 5 | 160 |
| All other earth and physical sciences . . | 19 | 30 | - | 41 | 2 | - | - | - | 7 | 1 | 270 | 4 | 274 |
| Astronomy . . . . . . . | 89 | 7 | - | 2 | 1 | - | - | - | 2 | - | 236 | 3 | 239 |
| Chemistry . . . . . . . | 87 | 2 | - | 1 | 4 | - | - | - | 5 | 1 | 571 | 9 | 580 |
| Physics . . . . . . . . | 86 | 3 | - | 6 | 1 | - | - | - | 3 | - | 497 | 2 | 499 |
| Geography . . . . . . . | 74 | 2 | - | - | - | 10 | 2 | - | 11 | - | 536 | 12 | 548 |
| Geology and geophysics | 86 | 7 | - | 3 | 1 | - | - | - | 2 | - | 486 | 7 | 493 |
| Oceanography . . . . . | 67 | 15 | - | 1 | 12 | 1 | - | - | 5 | - | 169 | 0 | 169 |
| Metallurgy . . . . . . | 43 | 7 | - | 47 | * | - | * | - | 3 | - | 199 | 1 | 200 |
| Meteorology . . . . . . | 80 | 9 | - | 2 | - | - | - | - | 9 | - | 246 | 4 | 250 |
| Mathematics . . . . . . | 76 | 3 | - | 6 | - | - | 1 | - | 13 | - | 512 | 6 | 518 |
| **Engineering** | | | | | | | | | | | | | |
| All other engineering . | 11 | 68 | 10 | - | - | - | - | - | 10 | - | 616 | 9 | 625 |
| Civil engineering . . . | 81 | 12 | 1 | - | - | - | - | - | 5 | 1 | 665 | 2 | 667 |
| Chemical engineering . | 86 | 8 | 4 | - | - | - | - | - | 2 | - | 719 | 4 | 723 |
| Electrical engineering | 87 | 8 | 3 | - | - | - | - | - | 2 | - | 844 | 16 | 860 |
| Mechanical engineering | 77 | 19 | 2 | - | - | - | - | - | 2 | - | 848 | 4 | 852 |
| **Life Sciences** | | | | | | | | | | | | | |
| All other biology . . . | 30 | 57 | - | - | - | - | 1 | - | 9 | 3 | 426 | 6 | 432 |
| Anatomy . . . . . . . . | 67 | 11 | - | - | - | - | - | - | 2 | 20 | 236 | 2 | 238 |
| General biology . . . . | 14 | 54 | 1 | - | - | 1 | - | - | 27 | 3 | 799 | 8 | 807 |
| Biochemistry . . . . . | 72 | 5 | 4 | - | - | - | - | - | 2 | 16 | 519 | 2 | 521 |
| Botany . . . . . . . . | 39 | 52 | 2 | - | - | - | - | - | 5 | - | 585 | 7 | 592 |
| Biophysics . . . . . . | 76 | 14 | 4 | - | - | - | 1 | - | 1 | 3 | 202 | 1 | 203 |
| Genetics . . . . . . . | 65 | 30 | 1 | - | - | 1 | - | - | 1 | - | 278 | 5 | 283 |
| Microbiology . . . . . | 74 | 10 | - | - | - | - | - | - | 2 | 15 | 659 | 5 | 664 |
| Pathology . . . . . . . | 50 | 10 | - | - | - | - | - | - | 1 | 39 | 115 | 3 | 118 |
| Pharmacology . . . . . | 71 | 6 | 6 | - | - | - | - | - | - | 17 | 227 | 1 | 228 |
| Physiology . . . . . . | 65 | 20 | 1 | - | - | 2 | - | - | 1 | 11 | 461 | 3 | 464 |
| Zoology . . . . . . . . | 34 | 54 | - | - | - | - | - | - | 8 | 3 | 619 | 6 | 625 |
| Agriculture . . . . . . | 73 | 19 | 2 | 1 | - | 1 | - | - | 4 | 1 | 470 | 3 | 473 |
| Forestry . . . . . . . | 56 | 28 | 6 | 1 | - | 1 | - | - | 7 | - | 468 | 5 | 473 |
| **Behavioral Sciences** | | | | | | | | | | | | | |
| Psychology . . . . . . | 93 | 1 | * | * | * | - | 1 | * | 3 | * | 693 | 5 | 698 |
| Anthropology . . . . . | 86 | 6 | 3 | - | - | - | 1 | - | 3 | 1 | 602 | 7 | 609 |
| Economics . . . . . . . | 65 | 4 | - | - | 7 | - | 1 | - | 22 | - | 669 | 10 | 679 |
| Sociology . . . . . . . | 74 | 9 | - | - | - | - | 1 | 3 | 10 | 3 | 552 | 7 | 559 |
| **Humanities** | | | | | | | | | | | | | |
| English . . . . . . . . | 70 | 3 | - | - | 1 | 1 | - | 1 | 24 | - | 503 | 12 | 515 |
| History . . . . . . . . | 67 | 2 | - | - | - | 6 | - | - | 25 | - | 571 | 7 | 578 |
| **Social Work** | | | | | | | | | | | | | |
| Social work . . . . . . | 92 | - | - | - | - | 5 | 1 | - | 2 | 1 | 793 | 6 | 799 |

*Less than one-half of 1 per cent.

TABLE D.13

FIELD OF STUDY BY EXPECTED FIRST EMPLOYER

(Per Cent)

| Field of Study | Expected First Employer: Self-employed Family Business | Private Company | Professional Partnership | Research Organization, Institute | College, University | Junior College, Technical Inst. | Elementary, Secondary School, or School System | Hospital, Clinic, Church, Welfare Other Non-Profit | Federal Government (U.S.) | State or Local Government | Other | Do Not Expect Employment | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | | |
| General physical sciences . . . | - | 4 | 1 | 3 | 18 | 7 | 66 | - | - | 1 | 1 | - | 149 | 11 | 160 |
| All other earch and physical sciences | 2 | 49 | - | 15 | 16 | 1 | 2 | - | 13 | 1 | 1 | - | 268 | 6 | 274 |
| Astronomy . . . | - | 9 | - | 26 | 51 | - | 1 | - | 12 | - | - | - | 233 | 6 | 239 |
| Chemistry . . . | 1 | 33 | - | 19 | 33 | 2 | 4 | 1 | 5 | 1 | - | - | 564 | 16 | 580 |
| Physics . . . . | - | 30 | - | 20 | 35 | 1 | 1 | - | 11 | - | 1 | - | 489 | 10 | 499 |
| Geography . . . | - | 3 | - | 5 | 52 | 7 | 12 | 1 | 14 | 5 | - | - | 541 | 7 | 548 |
| Geology and geophysics . . . | 1 | 35 | - | 16 | 29 | 1 | 2 | 1 | 12 | 2 | 2 | - | 485 | 8 | 493 |
| Oceanography . . | 1 | 8 | - | 33 | 33 | - | 1 | - | 23 | 1 | 1 | - | 166 | 3 | 169 |
| Metallurgy . . . | 2 | 57 | - | 23 | 11 | * | - | * | 7 | - | - | - | 197 | 3 | 200 |
| Meteorology . . | - | 6 | - | 20 | 15 | - | 1 | - | 57 | - | 2 | - | 246 | 4 | 250 |
| Mathematics . . | - | 24 | - | 10 | 43 | 2 | 12 | 1 | 6 | 1 | - | 1 | 508 | 10 | 518 |
| **Engineering** | | | | | | | | | | | | | | | |
| All other engineering . . . | - | 53 | 1 | 15 | 14 | - | - | - | 14 | 1 | 1 | - | 614 | 11 | 625 |
| Civil engineering | 1 | 42 | 3 | 6 | 21 | - | - | - | 16 | 10 | 1 | - | 652 | 15 | 667 |
| Chemical engineering . . . | - | 71 | 1 | 13 | 10 | - | - | - | 3 | - | - | - | 710 | 13 | 723 |
| Electrical engineering . . . | 1 | 65 | - | 14 | 12 | - | - | - | 7 | - | 1 | - | 836 | 24 | 860 |
| Mechanical engineering . . . | 1 | 58 | - | 13 | 18 | 1 | - | - | 8 | - | 1 | - | 839 | 13 | 852 |
| **Life Sciences** | | | | | | | | | | | | | | | |
| All other biology | - | 5 | - | 14 | 47 | 1 | 5 | 5 | 17 | 4 | 2 | - | 417 | 15 | 432 |
| Anatomy. . . . . | 2 | - | 1 | 12 | 71 | 1 | 1 | 6 | 5 | - | 1 | - | 230 | 8 | 238 |
| General biology | 1 | 4 | 1 | 14 | 35 | 6 | 32 | 4 | 4 | - | 1 | - | 742 | 65 | 807 |
| Biochemistry . . | 2 | 6 | 2 | 30 | 47 | - | - | 9 | 6 | - | 1 | - | 500 | 21 | 521 |
| Botany . . . . . | - | 3 | - | 10 | 67 | 3 | 6 | 1 | 8 | 1 | 1 | 1 | 582 | 10 | 592 |
| Biophysics . . . | - | 4 | - | 25 | 60 | - | 1 | 1 | 8 | - | - | - | 201 | 2 | 203 |
| Genetics . . . . | - | 6 | - | 18 | 68 | - | 1 | - | 4 | 1 | - | - | 276 | 7 | 283 |
| Microbiology . . | 4 | 7 | 2 | 24 | 35 | 3 | 1 | 10 | 10 | - | 1 | 4 | 640 | 24 | 664 |
| Pathology . . . | 8 | 1 | 5 | 18 | 42 | - | - | 16 | 9 | 2 | - | - | 116 | 2 | 118 |
| Pharmacology . . | 1 | 16 | - | 22 | 50 | - | - | 2 | 7 | - | 1 | - | 222 | 6 | 228 |
| Physiology . . . | - | 7 | 2 | 23 | 54 | - | 1 | 5 | 7 | - | 1 | - | 459 | 5 | 464 |
| Zoology . . . . | 1 | 2 | - | 16 | 63 | 3 | 6 | 1 | 6 | 2 | - | 1 | 611 | 14 | 625 |
| Agriculture . . | 2 | 15 | - | 14 | 47 | 1 | 2 | - | 13 | 5 | 1 | - | 464 | 9 | 473 |
| Forestry . . . . | 2 | 16 | - | 16 | 21 | - | 1 | - | 32 | 12 | 1 | - | 462 | 11 | 473 |
| **Behavioral Science** | | | | | | | | | | | | | | | |
| Psychology . . . | 1 | 7 | 1 | 12 | 35 | 2 | 5 | 28 | 5 | 3 | 1 | - | 680 | 18 | 698 |
| Anthropology . . | - | * | * | 15 | 71 | 3 | 1 | 3 | 4 | - | 2 | 2 | 593 | 16 | 609 |
| Economics . . . | 2 | 16 | 1 | 5 | 49 | 2 | 3 | 1 | 17 | 2 | 2 | - | 670 | 9 | 679 |
| Sociology . . . | 1 | 3 | - | 9 | 63 | 2 | 3 | 6 | 4 | 6 | 2 | - | 545 | 14 | 559 |
| **Humanities** | | | | | | | | | | | | | | | |
| English . . . . | 2 | 3 | - | - | 55 | 6 | 28 | 2 | 1 | - | 1 | 1 | 492 | 23 | 515 |
| History . . . . | - | 2 | - | 2 | 58 | 4 | 25 | 2 | 4 | 1 | 1 | 1 | 557 | 21 | 578 |
| **Social Work** | | | | | | | | | | | | | | | |
| Social work . . | - | 1 | - | 1 | 4 | - | 2 | 62 | 4 | 25 | 1 | - | 775 | 24 | 799 |

*Less than one-half of 1 per cent.

TABLE D.14

FIELD OF STUDY BY EXPECTED LONG-RUN EMPLOYER

(Per Cent)

| Field of Study | Expected Long-Run Employer | | | | | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Self-employed, Family Business | Private Company | Professional Partnership | Research Organization, Institute | College, University | Junior College, Technical Inst. | Elementary, Secondary School, or School System | Hospital, Clinic, Church, Welfare Other Non-Profit | Federal Government (U.S.) | State or Local Government | Other | Do Not Expect Employment | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | |
| General physical sciences . . . | 1 | 3 | - | 5 | 38 | 8 | 39 | 1 | 1 | 1 | 1 | 1 | 152 | 8 | 160 |
| All other earth and physical sciences . . . | 5 | 36 | 3 | 15 | 28 | 1 | 1 | 1 | 10 | - | - | - | 266 | 8 | 274 |
| Astronomy . . . | - | 4 | - | 18 | 66 | - | - | - | 10 | - | - | - | 237 | 2 | 239 |
| Chemistry . . . | 3 | 29 | 1 | 16 | 43 | - | 4 | 1 | 3 | - | - | 1 | 570 | 10 | 580 |
| Physics . . . . | 1 | 21 | 1 | 18 | 51 | - | 1 | - | 7 | - | 1 | - | 489 | 10 | 499 |
| Geography . . . | 2 | 3 | 1 | 5 | 67 | 4 | 6 | 1 | 8 | 2 | 2 | - | 545 | 3 | 548 |
| Geology and geophysics . . . | 5 | 21 | 1 | 12 | 51 | - | 1 | - | 6 | 1 | 2 | - | 486 | 7 | 493 |
| Oceanography . . | 1 | 5 | 1 | 23 | 52 | - | 1 | - | 15 | - | 2 | - | 166 | 3 | 169 |
| Metallurgy . . . | 5 | 41 | 1 | 24 | 25 | - | - | - | 5 | - | - | - | 198 | 2 | 200 |
| Meteorology . . | 2 | 5 | - | 15 | 31 | 1 | 1 | 1 | 41 | 1 | 2 | - | 247 | 3 | 250 |
| Mathematics . . | 1 | 20 | - | 9 | 52 | 2 | 8 | 1 | 5 | 2 | 1 | 1 | 507 | 11 | 518 |
| **Engineering** | | | | | | | | | | | | | | | |
| All other engineering . . . | 6 | 40 | 5 | 13 | 26 | - | - | - | 10 | - | 1 | - | 615 | 10 | 625 |
| Civil engineering | 12 | 21 | 16 | 6 | 29 | - | - | - | 9 | 6 | 1 | 1 | 650 | 17 | 667 |
| Chemical engineering . . . | 4 | 53 | 4 | 11 | 26 | - | - | - | 2 | - | - | - | 713 | 10 | 723 |
| Electrical engineering . . . | 6 | 51 | 3 | 14 | 19 | - | - | - | 5 | - | 1 | - | 839 | 21 | 860 |
| Mechanical engineering . . . | 8 | 44 | 4 | 14 | 25 | - | - | - | 6 | - | 1 | - | 842 | 10 | 852 |
| **Life Sciences** | | | | | | | | | | | | | | | |
| All other biology | 2 | 5 | 1 | 12 | 54 | 2 | 3 | 4 | 14 | 2 | 1 | 1 | 419 | 13 | 432 |
| Anatomy . . . . | 4 | - | 3 | 12 | 78 | - | - | 2 | 2 | - | - | 1 | 232 | 6 | 238 |
| General biology | 5 | 2 | - | 12 | 50 | 4 | 23 | 1 | 2 | - | - | 1 | 780 | 27 | 807 |
| Biochemistry . . | 7 | 6 | 3 | 23 | 56 | - | 1 | 2 | 3 | - | - | 1 | 503 | 18 | 521 |
| Botany . . . . . | 2 | 2 | 1 | 8 | 74 | 2 | 3 | 1 | 6 | 1 | 1 | 1 | 580 | 12 | 592 |
| Biophysics . . . | 2 | 4 | - | 14 | 72 | - | - | 1 | 6 | - | 1 | - | 200 | 3 | 203 |
| Genetics . . . . | 3 | 3 | - | 10 | 77 | - | 1 | 1 | 3 | 1 | - | - | 276 | 7 | 283 |
| Microbiology . . | 8 | 5 | 3 | 25 | 42 | 3 | 1 | 3 | 8 | - | 1 | 1 | 643 | 21 | 664 |
| Pathology . . . | 9 | 1 | 6 | 27 | 41 | - | - | 10 | 5 | 1 | 2 | - | 115 | 3 | 118 |
| Pharmacology . . | 4 | 13 | - | 19 | 59 | - | - | 1 | 3 | - | 1 | - | 223 | 5 | 228 |
| Physiology . . . | 2 | 4 | 2 | 19 | 65 | - | - | 4 | 4 | - | 1 | - | 456 | 8 | 464 |
| Zoology . . . . | 2 | 1 | 1 | 13 | 72 | 2 | 3 | - | 4 | 1 | - | - | 612 | 13 | 625 |
| Agriculture . . | 8 | 13 | 1 | 12 | 50 | - | 1 | - | 11 | 3 | - | - | 464 | 9 | 473 |
| Forestry . . . . | 6 | 15 | 1 | 13 | 38 | - | - | - | 22 | 5 | - | - | 463 | 10 | 473 |
| **Behavioral Science** | | | | | | | | | | | | | | | |
| Psychology . . . | 8 | 5 | 6 | 10 | 47 | 1 | 3 | 15 | 2 | 1 | 2 | - | 680 | 18 | 698 |
| Anthropology . . | - | - | - | 15 | 76 | 1 | - | 2 | 4 | - | 2 | 2 | 591 | 18 | 609 |
| Economics . . . | 6 | 14 | 2 | 2 | 60 | - | 1 | 1 | 11 | 2 | 1 | - | 662 | 17 | 679 |
| Sociology . . . | 1 | 3 | 1 | 9 | 67 | 1 | 1 | 6 | 4 | 3 | 2 | 1 | 545 | 14 | 559 |
| **Humanities** | | | | | | | | | | | | | | | |
| English . . . . | 3 | 1 | 1 | - | 73 | 3 | 14 | 2 | 1 | - | - | 2 | 498 | 17 | 515 |
| History . . . . | 1 | 1 | - | 1 | 71 | 2 | 13 | 2 | 5 | 1 | 1 | 1 | 561 | 17 | 578 |
| **Social Work** | | | | | | | | | | | | | | | |
| Social work . . | 2 | 2 | 4 | 2 | 11 | - | 2 | 52 | 7 | 15 | 2 | 1 | 774 | 25 | 799 |

TABLE D.15

FIELD OF STUDY BY ANTICIPATED CAREER ACTIVITIES

(Per Cent)

| Field of Study | Anticipated Career Activities: Teaching | Research and Development | Administration or Management | Service to Patients or Clients | None of the Above | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | |
| General physical sciences . . . . . | 92 | 27 | 16 | 5 | 1 | 155 | 5 | 160 |
| All other earth and physical sciences | 37 | 78 | 37 | 4 | 1 | 267 | 7 | 274 |
| Astronomy . . . . . | 69 | 93 | 16 | - | - | 238 | 1 | 239 |
| Chemistry . . . . . | 53 | 83 | 21 | 2 | 1 | 574 | 6 | 580 |
| Physics. . . . . . . | 58 | 87 | 14 | 1 | - | 488 | 11 | 499 |
| Geography . . . . . | 82 | 51 | 19 | 5 | 3 | 546 | 2 | 548 |
| Geology and geophysics | 62 | 82 | 18 | 5 | 2 | 488 | 5 | 493 |
| Oceanography . . . . | 56 | 89 | 19 | 2 | - | 167 | 2 | 169 |
| Metallurgy . . . . . | 30 | 87 | 38 | 2 | - | 200 | - | 200 |
| Meteorology . . . . | 46 | 80 | 35 | 11 | 3 | 246 | 4 | 250 |
| Mathematics . . . . | 71 | 62 | 15 | 3 | 1 | 510 | 8 | 518 |
| **Engineering** | | | | | | | | |
| All other engineering | 37 | 67 | 51 | 8 | - | 615 | 10 | 625 |
| Civil engineering . | 39 | 48 | 47 | 24 | 4 | 660 | 7 | 667 |
| Chemical engineering | 32 | 85 | 39 | 6 | 1 | 717 | 6 | 723 |
| Electrical engineering | 30 | 85 | 36 | 2 | 1 | 852 | 8 | 860 |
| Mechanical engineering | 33 | 77 | 39 | 5 | 2 | 850 | 2 | 852 |
| **Life Sciences** | | | | | | | | |
| All other biology . | 64 | 79 | 15 | 7 | 1 | 429 | 3 | 432 |
| Anatomy . . . . . . | 87 | 85 | 16 | 20 | - | 233 | 5 | 238 |
| General biology . . | 81 | 56 | 9 | 7 | 1 | 798 | 9 | 807 |
| Biochemistry . . . . | 64 | 83 | 11 | 17 | - | 515 | 6 | 521 |
| Botany . . . . . . . | 78 | 75 | 12 | 2 | 1 | 589 | 3 | 592 |
| Biophysics . . . . . | 76 | 94 | 16 | 5 | - | 202 | 1 | 203 |
| Genetics . . . . . . | 75 | 88 | 16 | 4 | - | 279 | 4 | 283 |
| Microbiology . . . . | 58 | 75 | 12 | 18 | 2 | 662 | 2 | 664 |
| Pathology . . . . | 72 | 83 | 24 | 46 | - | 116 | 2 | 118 |
| Pharmacology . . . . | 70 | 87 | 20 | 13 | - | 225 | 3 | 228 |
| Physiology . . . . . | 77 | 88 | 17 | 15 | - | 458 | 6 | 464 |
| Zoology . . . . . . | 80 | 76 | 12 | 4 | - | 621 | 4 | 625 |
| Agriculture . . . . | 55 | 74 | 30 | 9 | 2 | 471 | 2 | 473 |
| Forestry . . . . . . | 44 | 72 | 47 | 5 | 1 | 471 | 2 | 473 |
| **Behavioral Science** | | | | | | | | |
| Psychology . . . . . | 65 | 73 | 19 | 54 | - | 693 | 5 | 698 |
| Anthropology . . . . | 85 | 83 | 14 | 4 | 2 | 605 | 4 | 609 |
| Economics . . . . . | 68 | 54 | 38 | 8 | 2 | 675 | 4 | 679 |
| Sociology . . . . . | 77 | 68 | 25 | 16 | 1 | 555 | 4 | 559 |
| **Humanities** | | | | | | | | |
| English . . . . . . | 92 | 23 | 9 | 4 | 4 | 512 | 3 | 515 |
| History . . . . . . | 91 | 41 | 17 | 5 | 2 | 567 | 11 | 578 |
| **Social Work** | | | | | | | | |
| Social work . . . . | 27 | 27 | 42 | 84 | 1 | 790 | 9 | 799 |

TABLE E.1

FIELD OF STUDY BY EMPLOYMENT STATUS

(Per Cent)

| Field of Study | Employment, 6-62 to 7-63 | | | | Currently Employed at Same Job | | | |
|---|---|---|---|---|---|---|---|---|
| | Yes | N | NA | Total | Yes | N | NA | Total |
| Physical Sciences | | | | | | | | |
| General physical sciences | 70 | 159 | 1 | 160 | 78 | 108 | 3 | 111 |
| All other earth and physical sciences . . . . . | 62 | 273 | 1 | 274 | 74 | 169 | 1 | 170 |
| Astronomy . . . . . . . . | 65 | 239 | - | 239 | 46 | 155 | 1 | 156 |
| Chemistry . . . . . . . . | 47 | 580 | - | 580 | 63 | 269 | 4 | 273 |
| Physics . . . . . . . . . | 60 | 499 | - | 499 | 60 | 296 | 2 | 298 |
| Geography . . . . . . . . | 68 | 548 | - | 548 | 66 | 369 | 6 | 375 |
| Geology and geophysics . | 59 | 493 | - | 493 | 51 | 288 | 4 | 292 |
| Oceanography . . . . . . | 53 | 169 | - | 169 | 49 | 88 | 1 | 89 |
| Metallurgy . . . . . . . | 68 | 200 | - | 200 | 82 | 134 | 1 | 135 |
| Meteorology . . . . . . . | 58 | 248 | 2 | 250 | 69 | 141 | 4 | 145 |
| Mathematics . . . . . . . | 63 | 517 | 1 | 518 | 64 | 321 | 4 | 325 |
| Engineering | | | | | | | | |
| All other engineering . . | 74 | 622 | 3 | 625 | 68 | 462 | 1 | 463 |
| Civil engineering . . . . | 79 | 666 | 1 | 667 | 65 | 521 | 4 | 525 |
| Chemical engineering . . | 68 | 723 | - | 723 | 82 | 490 | 4 | 494 |
| Electrical engineering . | 82 | 857 | 3 | 860 | 80 | 695 | 10 | 705 |
| Mechanical engineering . | 80 | 850 | 2 | 852 | 78 | 680 | 1 | 681 |
| Life Sciences | | | | | | | | |
| All other biology . . . . | 36 | 432 | - | 432 | 59 | 153 | 1 | 154 |
| Anatomy . . . . . . . . . | 36 | 238 | - | 238 | 52 | 85 | - | 85 |
| General biology . . . . . | 49 | 807 | - | 807 | 64 | 388 | 4 | 392 |
| Biochemistry . . . . . . | 33 | 521 | - | 521 | 37 | 170 | 2 | 172 |
| Botany . . . . . . . . . | 39 | 592 | - | 592 | 52 | 227 | 3 | 230 |
| Biophysics . . . . . . . | 30 | 203 | - | 203 | 42 | 60 | - | 60 |
| Genetics . . . . . . . . | 36 | 283 | - | 283 | 51 | 101 | 1 | 102 |
| Microbiology . . . . . . | 39 | 664 | - | 664 | 58 | 257 | 3 | 260 |
| Pathology . . . . . . . . | 56 | 117 | 1 | 118 | 79 | 66 | - | 66 |
| Pharmacology . . . . . . | 36 | 228 | - | 228 | 59 | 82 | - | 82 |
| Physiology . . . . . . . | 38 | 464 | - | 464 | 56 | 174 | 2 | 176 |
| Zoology . . . . . . . . . | 44 | 623 | 2 | 625 | 53 | 275 | 1 | 276 |
| Agriculture . . . . . . . | 45 | 473 | - | 473 | 65 | 212 | 2 | 214 |
| Forestry . . . . . . . . | 63 | 473 | - | 473 | 50 | 291 | 7 | 298 |
| Behavioral Sciences | | | | | | | | |
| Psychology . . . . . . . | 59 | 698 | - | 698 | 61 | 411 | 3 | 414 |
| Anthropology . . . . . . | 52 | 609 | - | 609 | 49 | 313 | 5 | 318 |
| Economics . . . . . . . . | 65 | 679 | - | 679 | 63 | 434 | 5 | 439 |
| Sociology . . . . . . . . | 67 | 559 | - | 559 | 61 | 369 | 3 | 372 |
| Humanities | | | | | | | | |
| English . . . . . . . . . | 60 | 513 | 2 | 515 | 71 | 303 | 3 | 306 |
| History . . . . . . . . . | 63 | 576 | 2 | 578 | 66 | 364 | 2 | 366 |
| Social Work | | | | | | | | |
| Social work . . . . . . . | 65 | 799 | - | 799 | 43 | 511 | 5 | 516 |

TABLE E.2

FIELD OF STUDY BY NUMBER OF MONTHS WORKING THIRTY-FIVE HOURS PER WEEK OR MORE

(Per Cent)

| Field of Study | Months Working Thirty-five Hours per Week or More | | | | | | | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | None | One | Two | Three | Four | Five | Six | Seven | Eight | Nine | Ten | Eleven | Twelve | | | |
| **Physical Sciences** | | | | | | | | | | | | | | | | |
| General physical sciences | 9 | - | 5 | 8 | - | 1 | 1 | - | - | 36 | 23 | 2 | 15 | 110 | 1 | 111 |
| All other earth and physical sciences | 10 | 1 | 5 | 16 | 1 | - | 1 | 1 | - | 4 | - | 2 | 60 | 169 | 1 | 170 |
| Astronomy | 15 | 1 | 10 | 44 | 4 | 1 | 1 | - | 1 | 1 | 1 | - | 24 | 156 | - | 156 |
| Chemistry | 14 | 3 | 7 | 23 | 1 | 2 | * | 1 | * | 2 | 4 | * | 41 | 269 | 4 | 273 |
| Physics | 17 | 2 | 7 | 30 | 2 | 1 | 1 | - | * | 1 | 1 | 1 | 37 | 296 | 2 | 298 |
| Geography | 20 | 3 | 10 | 19 | 3 | 2 | 1 | 1 | 1 | 10 | 6 | 3 | 22 | 363 | 12 | 375 |
| Geology and geophysics | 15 | 3 | 10 | 37 | 8 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 18 | 291 | 1 | 292 |
| Oceanography | 18 | 1 | 11 | 37 | 9 | 2 | 1 | 1 | 1 | - | - | - | 18 | 89 | - | 89 |
| Metallurgy | 7 | - | 3 | 13 | 2 | - | 1 | 1 | 1 | 3 | - | - | 69 | 134 | 1 | 135 |
| Meteorology | 20 | 3 | 6 | 24 | 2 | 1 | - | 1 | 1 | 3 | 1 | 1 | 37 | 139 | 6 | 145 |
| Mathematics | 21 | 2 | 7 | 20 | 2 | * | 1 | 1 | 2 | 6 | 4 | 2 | 32 | 321 | 4 | 325 |
| **Engineering** | | | | | | | | | | | | | | | | |
| All other engineering | 7 | 1 | 4 | 24 | 3 | 1 | 2 | - | * | 2 | * | 1 | 55 | 457 | 6 | 463 |
| Civil engineering | 8 | 1 | 6 | 29 | 5 | 1 | 1 | * | 1 | 2 | 1 | - | 46 | 521 | 4 | 525 |
| Chemical engineering | 8 | * | 6 | 27 | 5 | 1 | * | 2 | 1 | 2 | 2 | - | 46 | 490 | 4 | 494 |
| Electrical engineering | 6 | * | 2 | 20 | 3 | 1 | * | 1 | * | 1 | 1 | 1 | 61 | 698 | 7 | 705 |
| Mechanical engineering | 7 | 1 | 4 | 18 | 4 | * | 1 | 1 | * | 2 | 1 | 1 | 58 | 677 | 4 | 681 |
| **Life Sciences** | | | | | | | | | | | | | | | | |
| All other biology | 14 | 1 | 8 | 29 | 8 | 1 | 2 | - | - | 1 | 2 | 9 | 23 | 153 | 1 | 154 |
| Anatomy | 30 | 1 | 15 | 18 | 5 | - | 4 | 4 | 2 | 1 | - | 2 | 17 | 84 | 1 | 85 |
| General biology | 30 | 3 | 9 | 13 | 1 | 1 | 2 | 1 | 1 | 6 | 8 | 3 | 23 | 391 | 1 | 392 |
| Biochemistry | 15 | 2 | 23 | 37 | 6 | 2 | 2 | * | - | * | - | - | 13 | 171 | 1 | 172 |
| Botany | 30 | 5 | 7 | 20 | 10 | 4 | 1 | - | - | 5 | 5 | 2 | 13 | 227 | 3 | 230 |
| Biophysics | 22 | 3 | 15 | 33 | 2 | - | 3 | 2 | - | 3 | - | 2 | 15 | 60 | - | 60 |
| Genetics | 19 | 2 | 14 | 26 | 4 | - | 1 | 3 | - | 2 | 2 | 1 | 27 | 101 | 1 | 102 |
| Microbiology | 19 | * | 14 | 27 | 2 | * | 3 | 1 | 1 | 3 | 1 | 1 | 29 | 258 | 2 | 260 |
| Pathology | 23 | 2 | - | 11 | 2 | - | 3 | - | 2 | - | - | - | 58 | 65 | 1 | 66 |
| Pharmacology | 30 | 1 | 15 | 15 | 6 | 1 | 4 | 1 | 1 | 4 | 1 | 1 | 20 | 81 | 1 | 82 |
| Physiology | 28 | 1 | 8 | 25 | 4 | 2 | - | - | 1 | 1 | 2 | - | 29 | 172 | 4 | 176 |
| Zoology | 27 | 3 | 11 | 30 | 4 | 1 | 1 | - | * | 8 | 1 | * | 14 | 274 | 2 | 276 |
| Agriculture | 17 | 1 | 5 | 25 | 4 | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 36 | 211 | 3 | 214 |
| Forestry | 10 | 1 | 6 | 33 | 12 | 1 | 3 | 1 | 3 | 2 | 1 | 2 | 24 | 293 | 5 | 298 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | | |
| Psychology | 31 | 1 | 10 | 24 | 3 | 1 | 3 | 1 | - | 2 | 2 | 2 | 21 | 412 | 2 | 414 |
| Anthropology | 27 | 3 | 13 | 24 | 5 | 2 | 5 | 1 | 1 | 2 | 2 | 2 | 14 | 314 | 4 | 318 |
| Economics | 17 | 3 | 7 | 25 | 3 | 1 | 3 | 2 | 1 | 5 | 3 | 2 | 30 | 433 | 6 | 439 |
| Sociology | 22 | 4 | 9 | 18 | 3 | 1 | 5 | 1 | 2 | 3 | 5 | 2 | 26 | 371 | 1 | 372 |
| **Humanities** | | | | | | | | | | | | | | | | |
| English | 23 | 1 | 7 | 15 | 1 | 2 | 2 | 2 | 1 | 12 | 14 | 2 | 18 | 302 | 4 | 306 |
| History | 26 | 2 | 8 | 15 | 3 | 2 | 1 | - | 1 | 6 | 10 | 3 | 22 | 363 | 3 | 366 |
| **Social Work** | | | | | | | | | | | | | | | | |
| Social work | 14 | 1 | 12 | 43 | 10 | 2 | 1 | * | 1 | * | 1 | 1 | 14 | 511 | 5 | 516 |

*Less than one-half of 1 per cent.

TABLE E.3

FIELD OF STUDY BY CURRENT FIELD OF EMPLOYMENT (COMPOSITE FIELDS)

(Per Cent)

| Field of Study | Composite Field of Employment | | | | | | | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Physical Sciences | Engineering | Life Sciences | Behavioral Sciences | Humanities | Social Work | All Other Miscellaneous and Health | | | |
| **Physical Sciences** | | | | | | | | | | |
| General physical sciences . . . . . | 13 | 4 | 6 | - | - | - | 77 | 106 | 5 | 111 |
| All other earth and physical sciences. | 22 | 57 | 1 | 1 | - | - | 19 | 166 | 4 | 170 |
| Astronomy . . . . . | 73 | 11 | 2 | 1 | 1 | - | 12 | 154 | 2 | 156 |
| Chemistry . . . . . | 69 | 4 | 6 | 1 | 1 | - | 18 | 265 | 8 | 273 |
| Physics . . . . . . | 58 | 22 | 3 | - | - | - | 17 | 292 | 6 | 298 |
| Geography . . . . . | 41 | 3 | 2 | 7 | 1 | - | 45 | 345 | 30 | 375 |
| Geology and geophysics | 66 | 8 | 1 | 1 | 1 | - | 22 | 283 | 9 | 292 |
| Oceanography . . . . | 62 | 7 | 10 | - | - | - | 20 | 88 | 1 | 89 |
| Metallurgy . . . . . | 32 | 62 | - | 1 | - | - | 5 | 130 | 5 | 135 |
| Meteorology . . . . | 68 | 6 | - | - | - | - | 26 | 139 | 6 | 145 |
| Mathematics . . . . | 49 | 15 | 3 | 2 | 1 | - | 31 | 318 | 7 | 325 |
| **Engineering** | | | | | | | | | | |
| All other engineering | 10 | 77 | * | 1 | - | - | 12 | 458 | 5 | 463 |
| Civil engineering . | 1 | 89 | * | * | * | 1 | 9 | 510 | 15 | 525 |
| Chemical engineering | 8 | 87 | * | * | * | - | 5 | 487 | 7 | 494 |
| Electrical engineering | 2 | 93 | - | 1 | * | - | 3 | 690 | 15 | 705 |
| Mechanical engineering | 1 | 93 | * | * | - | * | 5 | 674 | 7 | 681 |
| **Life Sciences** | | | | | | | | | | |
| All other biology . | 2 | - | 60 | 1 | - | - | 36 | 151 | 3 | 154 |
| Anatomy . . . . . . | 1 | - | 49 | - | 2 | - | 48 | 84 | 1 | 85 |
| General biology . . | 3 | 1 | 48 | 2 | - | 1 | 46 | 377 | 15 | 392 |
| Biochemistry . . . . | 16 | 2 | 50 | 2 | - | - | 31 | 166 | 6 | 172 |
| Botany . . . . . . . | 4 | 3 | 60 | 2 | * | - | 31 | 222 | 8 | 230 |
| Biophysics . . . . . | 32 | 12 | 38 | - | - | - | 19 | 59 | 1 | 60 |
| Genetics . . . . . . | 3 | - | 68 | 4 | 1 | - | 24 | 99 | 3 | 102 |
| Microbiology . . . . | 4 | * | 60 | 1 | - | - | 35 | 255 | 5 | 260 |
| Pathology . . . . . | - | - | 44 | - | 2 | - | 55 | 64 | 2 | 66 |
| Pharmacology . . . . | 7 | 1 | 32 | - | - | - | 59 | 81 | 1 | 82 |
| Physiology . . . . . | 5 | 4 | 56 | 1 | 1 | - | 34 | 172 | 4 | 176 |
| Zoology . . . . . . | 3 | 1 | 63 | 2 | * | - | 31 | 274 | 2 | 276 |
| Agriculture . . . . | 2 | 3 | 74 | 1 | 1 | - | 19 | 207 | 7 | 214 |
| Forestry . . . . . . | 4 | 3 | 70 | 2 | * | * | 20 | 283 | 15 | 298 |
| **Behavioral Sciences** | | | | | | | | | | |
| Psychology . . . . . | * | 2 | 1 | 59 | * | 2 | 35 | 405 | 9 | 414 |
| Anthropology . . . . | 2 | 3 | 2 | 43 | 3 | 3 | 44 | 312 | 6 | 318 |
| Economics . . . . . | 1 | 3 | 9 | 32 | 1 | * | 53 | 419 | 20 | 439 |
| Sociology . . . . . | 2 | - | 1 | 37 | 2 | 8 | 51 | 360 | 12 | 372 |
| **Humanities** | | | | | | | | | | |
| English . . . . . . | 1 | 1 | 2 | 2 | 22 | 1 | 71 | 295 | 11 | 306 |
| History . . . . . . | 1 | 2 | 2 | 5 | 19 | 4 | 68 | 355 | 11 | 366 |
| **Social Work** | | | | | | | | | | |
| Social work . . . . | * | * | 1 | 4 | 1 | 76 | 17 | 506 | 10 | 516 |

*Less than one-half of 1 per cent.

TABLE E.4

FIELD OF STUDY BY CURRENT EMPLOYER

(Per Cent)

| Field of Study | Current Employer: Self-Employed, In Business Owned by Family | Private Company | Professional Partnership | Research Organization or Institute | College or University at Which I Am Enrolled | Another College or University | Junior College or Technical Institute | Elementary or Secondary School or School System | Hospital or Clinic, Church, Welfare, or Other Non-Profit | Federal Government (U.S.) (Other Than Above) | State or Local Government (Other Than Above) | Other | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Physical Sciences** | | | | | | | | | | | | | | | |
| General physical sciences | 2 | 8 | - | 1 | 8 | 4 | 1 | 72 | 1 | 4 | 1 | 2 | 108 | 3 | 111 |
| All other earth and physical sciences . . . . . . | 1 | 62 | 1 | 8 | 10 | 1 | - | 3 | - | 15 | 1 | - | 168 | 2 | 170 |
| Astronomy . . . . . . . . . . | 1 | 19 | 1 | 28 | 26 | 8 | - | - | 1 | 21 | 1 | 3 | 155 | 1 | 156 |
| Chemistry . . . . . . . . . . | 2 | 47 | * | 13 | 15 | 7 | * | 5 | 4 | 7 | 7 | 2 | 267 | 6 | 273 |
| Physics . . . . . . . . . . | 2 | 42 | 1 | 16 | 16 | 6 | 1 | 3 | * | 18 | * | 2 | 296 | 2 | 298 |
| Geography . . . . . . . . . | 3 | 17 | 1 | 3 | 24 | 15 | 1 | 13 | 2 | 15 | 7 | 4 | 367 | 8 | 375 |
| Geology and geophysics . . | 5 | 38 | 2 | 15 | 17 | 6 | - | 2 | 1 | 12 | 9 | 3 | 290 | 2 | 292 |
| Oceanography . . . . . . . . | 5 | 14 | 1 | 16 | 37 | 5 | 2 | 2 | - | 24 | 6 | - | 88 | 1 | 89 |
| Metallurgy . . . . . . . . . | 2 | 59 | 2 | 19 | 13 | 3 | 2 | - | - | 14 | - | 2 | 133 | 2 | 135 |
| Meteorology . . . . . . . . | 1 | 6 | - | 18 | 16 | 3 | 1 | 2 | - | 57 | 1 | 3 | 142 | 3 | 145 |
| Mathematics . . . . . . . . | 2 | 38 | * | 14 | 17 | 8 | * | 12 | 2 | 11 | 1 | 4 | 321 | 4 | 325 |
| **Engineering** | | | | | | | | | | | | | | | |
| All other engineering . . . | 1 | 60 | * | 13 | 12 | 2 | * | - | 1 | 13 | 1 | 2 | 462 | 1 | 463 |
| Civil engineering . . . . . | 2 | 33 | 7 | 6 | 20 | 4 | * | - | - | 14 | 17 | 10 | 521 | 4 | 525 |
| Chemical engineering . . . | 1 | 66 | - | 13 | 14 | 2 | 2 | 1 | * | 6 | 1 | | 490 | 4 | 494 |
| Electrical engineering . . | 1 | 67 | * | 13 | 12 | 2 | 1 | - | * | 7 | * | 1 | 694 | 11 | 705 |
| Mechanical engineering . . | 1 | 66 | 1 | 9 | 15 | 3 | * | - | * | 9 | * | 2 | 675 | 6 | 681 |
| **Life Sciences** | | | | | | | | | | | | | | | |
| All other biology . . . . . | 2 | 14 | - | 10 | 34 | 5 | - | 4 | 12 | 16 | 8 | 1 | 154 | - | 154 |
| Anatomy . . . . . . . . . . | 7 | 6 | - | 8 | 35 | 9 | - | 1 | 24 | 6 | 2 | 5 | 85 | - | 85 |
| General biology . . . . . . | 1 | 16 | 1 | 16 | 17 | 5 | 1 | 30 | 13 | 3 | 4 | 3 | 386 | 6 | 392 |
| Biochemistry . . . . . . . | 2 | 29 | - | 15 | 25 | 12 | - | - | 11 | 7 | 4 | 5 | 170 | 2 | 172 |

*Less than one-half of 1 per cent.

TABLE E.4--Continued

| Field of Study | Current Employer: Self-Employed, In Business Owned by Family | Private Company | Professional Partnership | Research Organization or Institute | College or University at Which I Am Enrolled | Another College or University | Junior College or Technical Institute | Elementary or Secondary School or School System | Hospital or Clinic, Church, Welfare, or Other Non-Profit | Federal Government (U.S.) (Other Than Above) | State or Local Government (Other Than Above) | Other | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Life Sciences--Continued** | | | | | | | | | | | | | | | |
| Botany | 4 | 12 | 1 | 9 | 44 | 12 | 3 | 7 | 5 | 9 | 4 | 2 | 226 | 4 | 230 |
| Biophysics | 3 | 17 | - | 17 | 29 | 17 | - | 2 | 8 | 20 | - | 3 | 59 | 1 | 60 |
| Genetics | 1 | 17 | 1 | 12 | 48 | 12 | 1 | 2 | 5 | 8 | 4 | 1 | 101 | 1 | 102 |
| Microbiology | 1 | 12 | 1 | 15 | 29 | 7 | * | 3 | 27 | 11 | 5 | 2 | 256 | 4 | 260 |
| Pathology | 5 | 6 | 3 | 17 | 35 | 5 | - | - | 21 | 15 | 2 | 5 | 66 | - | 66 |
| Pharmacology | 2 | 48 | - | 6 | 25 | 5 | - | 1 | 11 | 5 | 2 | 4 | 81 | 1 | 82 |
| Physiology | 4 | 18 | 1 | 18 | 31 | 10 | 1 | 4 | 11 | 10 | 2 | 5 | 175 | 1 | 176 |
| Zoology | 3 | 10 | 1 | 15 | 40 | 12 | 2 | 7 | 6 | 6 | 9 | 4 | 275 | 1 | 276 |
| Agriculture | 9 | 10 | * | 5 | 44 | 8 | - | 4 | 1 | 18 | 8 | 3 | 212 | 2 | 214 |
| Forestry | 4 | 15 | - | 21 | 26 | 5 | - | 1 | 2 | 28 | 10 | 2 | 291 | 7 | 298 |
| **Behavioral Sciences** | | | | | | | | | | | | | | | |
| Psychology | 4 | 16 | 2 | 8 | 18 | 7 | * | 6 | 25 | 9 | 7 | 8 | 411 | 3 | 414 |
| Anthropology | 3 | 14 | * | 17 | 36 | 12 | 1 | 1 | 10 | 7 | 5 | 6 | 315 | 3 | 318 |
| Economics | 5 | 28 | 1 | 6 | 22 | 13 | 1 | 3 | 2 | 15 | 7 | 5 | 433 | 6 | 439 |
| Sociology | 4 | 13 | 2 | 10 | 26 | 8 | 2 | 5 | 17 | 5 | 10 | 8 | 367 | 5 | 372 |
| **Humanities** | | | | | | | | | | | | | | | |
| English | 5 | 19 | 1 | 2 | 17 | 8 | 2 | 32 | 6 | 6 | 2 | 6 | 301 | 5 | 306 |
| History | 4 | 17 | 2 | 3 | 18 | 9 | 1 | 27 | 9 | 5 | 6 | 6 | 361 | 5 | 366 |
| **Social Work** | | | | | | | | | | | | | | | |
| Social work | 1 | 6 | 1 | 2 | 4 | 2 | - | 1 | 55 | 3 | 29 | 4 | 510 | 6 | 516 |

*Less than one-half of 1 per cent.

TABLE E.5

FIELD OF STUDY BY JOB DUTIES

(Per Cent)

| Field of Study | Job Duties: Teaching | Research and Development | Administration and Management | Service to Patients or Clients | Other | N | NA | Total N |
|---|---|---|---|---|---|---|---|---|
| Physical Sciences | | | | | | | | |
| General physical sciences | 80 | 4 | 5 | 3 | 14 | 109 | 2 | 111 |
| All other earth and physical sciences . . . . . | 8 | 66 | 17 | 9 | 14 | 168 | 2 | 170 |
| Astronomy . . . . . . . . | 12 | 81 | 5 | 1 | 10 | 155 | 1 | 156 |
| Chemistry . . . . . . . . | 23 | 59 | 6 | 7 | 16 | 266 | 7 | 273 |
| Physics . . . . . . . . . | 16 | 66 | 7 | 5 | 14 | 295 | 3 | 298 |
| Geography . . . . . . . . | 42 | 18 | 17 | 14 | 25 | 365 | 10 | 375 |
| Geology and geophysics . | 15 | 49 | 6 | 16 | 23 | 290 | 2 | 292 |
| Oceanography . . . . . . | 22 | 61 | 7 | 8 | 13 | 87 | 2 | 89 |
| Metallurgy . . . . . . . | 7 | 78 | 13 | 4 | 9 | 133 | 2 | 135 |
| Meteorology . . . . . . . | 11 | 45 | 13 | 16 | 26 | 141 | 4 | 145 |
| Mathematics . . . . . . . | 31 | 43 | 7 | 8 | 19 | 320 | 5 | 325 |
| Engineering | | | | | | | | |
| All other engineering . . | 8 | 59 | 23 | 6 | 15 | 460 | 3 | 463 |
| Civil engineering . . . . | 17 | 31 | 20 | 21 | 27 | 512 | 13 | 525 |
| Chemical engineering . . | 11 | 71 | 8 | 4 | 13 | 490 | 4 | 494 |
| Electrical engineering . | 11 | 79 | 10 | 3 | 7 | 694 | 11 | 705 |
| Mechanical engineering . | 13 | 67 | 11 | 4 | 17 | 675 | 6 | 681 |
| Life Sciences | | | | | | | | |
| All other biology . . . . | 19 | 47 | 16 | 19 | 21 | 154 | - | 154 |
| Anatomy . . . . . . . . . | 38 | 38 | 7 | 27 | 19 | 85 | - | 85 |
| General biology . . . . . | 42 | 31 | 6 | 17 | 13 | 389 | 3 | 392 |
| Biochemistry . . . . . . | 12 | 54 | 3 | 21 | 18 | 169 | 3 | 172 |
| Botany . . . . . . . . . | 45 | 34 | 10 | 8 | 13 | 226 | 4 | 230 |
| Biophysics . . . . . . . | 19 | 71 | 9 | 7 | 16 | 58 | 2 | 60 |
| Genetics . . . . . . . . | 21 | 56 | 13 | 15 | 13 | 101 | 1 | 102 |
| Microbiology . . . . . . | 18 | 46 | 9 | 29 | 18 | 254 | 6 | 260 |
| Pathology . . . . . . . . | 35 | 58 | 8 | 47 | 11 | 66 | - | 66 |
| Pharmacology . . . . . . | 20 | 35 | 11 | 49 | 3 | 79 | 3 | 82 |
| Physiology . . . . . . . | 32 | 48 | 9 | 17 | 19 | 175 | 1 | 176 |
| Zoology . . . . . . . . . | 38 | 42 | 6 | 8 | 17 | 274 | 2 | 276 |
| Agriculture . . . . . . . | 24 | 44 | 18 | 13 | 27 | 211 | 3 | 214 |
| Forestry . . . . . . . . | 18 | 55 | 20 | 8 | 16 | 291 | 7 | 298 |
| Behavioral Sciences | | | | | | | | |
| Psychology . . . . . . . | 15 | 35 | 9 | 35 | 21 | 410 | 4 | 414 |
| Anthropology . . . . . . | 22 | 33 | 15 | 14 | 30 | 313 | 5 | 318 |
| Economics . . . . . . . . | 37 | 32 | 33 | 19 | 24 | 329 | 10 | 439 |
| Sociology . . . . . . . . | 25 | 29 | 20 | 25 | 22 | 369 | 3 | 372 |
| Humanities | | | | | | | | |
| English . . . . . . . . . | 50 | 5 | 13 | 13 | 27 | 303 | 3 | 306 |
| History . . . . . . . . . | 47 | 6 | 11 | 16 | 29 | 359 | 7 | 366 |
| Social Work | | | | | | | | |
| Social work . . . . . . . | 7 | 5 | 15 | 76 | 11 | 509 | 7 | 516 |

APPENDIX 4

SURVEY MATERIALS

*national opinion research center*

# NORC

UNIVERSITY OF CHICAGO
5720 Woodlawn Avenue, Chicago 37, Illinois
PLaza 2-6444 Area Code 312
PETER H. ROSSI, *Director*

Spring, 1963

Dear Graduate Student:

The National Science Foundation has asked the National Opinion Research Center of the University of Chicago to conduct a national survey of the graduate students in the sciences, engineering and several of the humanities.

The survey concerns the academic progress and financial circumstances of graduate students. Systematic information is needed on these matters to help shape policies in relation to graduate education.

You are one of 25,000 graduate students enrolled at 130 American universities who has been chosen by scientific selection procedures to participate in this survey. You are asked to contribute approximately forty-five minutes of your time toward the study by answering a questionnaire. The sampling method is designed to give a cross-section of American graduate students in the sciences, engineering and a few other fields. Your answers will remain completely confidential as they will be read only by the research staff. Reports of the study will be based on statistical tables identifying no individual.

Even though some of you are part-time students who do not think of yourselves as "graduate students", please answer every question where appropriate. We hope that all of you will answer as best you can. Although you are only one of 25,000 graduate students in the sample, it is essential that you participate. We urge you to complete the questionnaire so that our findings are representative of all American graduate students in the fields selected for study.

Thank you very much for your help.

Sincerely,

Seymour Warkov

Seymour Warkov
Senior Study Director



EASTERN REPRESENTATIVE: Paul B. Sheatsley • 55 Fifth Avenue • New York 3 • New York Telephone: ALgonquin 5-5290 • Area Code 212

# FIELD LIST

The following field list is to be used in answering some or all of the following questions: 19 - 25, 42 D and I, and 43 D. Each field can be used to describe a field of study or a type of job. Thus, for example, in questions about fields of stu'y, "Mechanical Engineering" means college courses in Mechanical Engineering; in questions about careers,"Mechanical Engineering" means the occupation of mechanical engineers.

When you have chosen from the list, the field or occupation which is your answer to a given question, please write its code number in the boxes. For example, "Mechanical Engineering" is (16).

| | |
|---|---|
| 1 | 6 |

AGRICULTURE
45 Agriculture, general
45 Agronomy, Field Crops
45 Animal husbandry
45 Dairy Manufacturing, Dairy Tech.
45 Farm Management
45 Food Technology
45 Horticulture
45 Ornamental Horticulture
45 Poultry Husbandry
45 Soils (Soil Sci., Mgt., & Conservation)
45 Agriculture, all other

86 ARCHITECTURE

BIOLOGICAL SCIENCES
31 Biology, general
33 Botany, general
41 Zoology, general
30 Anatomy and Histology
37 Bacteriology, Virology, Mycology, Parasitology, Microbiology
32 Biochemistry
34 Biophysics
3X Cytology
3X Ecology
3X Embryology
35 Entomology
36 Genetics
3X Nutrition
38 Pathology
39 Pharmacology
40 Physiology
3X Plant Pathology
3X Biological Sciences, all other

BUSINESS, COMMERCE AND ADMINISTRATION

92 Accounting
90 Advertising, Public Relations
9X Military Service, Military Science
97 Secretarial Science (or employed as a secretary)
72 Industrial or Personnel Psychology
91 All other business and commercial fields (Business Administration, Marketing, Insurance, Finance, Industrial Relations,etc.)
93 Public Administration (or employed as government administrator if not covered by other fields)

Education (NOTE: Junior College, College and University Teaching should be coded by Field of Specialization, not as Education)
50 Elementary (including Kindergarten and Nursery School)
Secondary--Academic Subject Fields
51 English
52 Modern Foreign Languages
53 Latin, Greek
54 History, Social Studies
55 Natural Science (General, Physics, Chemistry, Biology, etc.)
56 Mathematics

Specialized Teaching Fields
57 Physical Education , Health, Recreation
58 Music Education
59 Art Education
60 Education of Exceptional Children (Including Speech Correction)
61 Agricultural Education
62 Home Economics Education
63 Business Education
64 Trade and Industrial Education (Vocational)
65 Industrial Arts Education (Non-Vocational)
66 Counseling and Guidance
67 Educational Psychology
68 Administration and Supervision
6X Education, General and other specialties

Engineering
10 Aeronautical
11 Civil (including Agricultural, Architectural, Civil, Sanitary)
12 Chemical (including Ceramic)
13 Electrical
14 Engineering Science, Engineering Physics, Engineering Mechanics
15 Industrial
16 Mechanical (including Naval Architecture and Marine, Welding, Textile)
17 Metallurgical
18 Mining (including Mining, Geological, Geophysical, Petroleum)
1X Engineering, General and other specialties

# SAMPLE FINANCIAL INVENTORY

This enclosure contains a Financial Inventory which was filled out by a graduate student, John Barclay (pseudonym). It illustrates how the Inventory on pages 12 and 13 of the questionnaire is to be completed.

Barclay is a second year graduate student at a private university working for a doctor's degree in chemistry. He is married, the father of one pre-school child. His financial circumstances during the twelve month period of July, 1962 through June, 1963 are as follows:

INCOMING: He received a summer (1962) research assistantship paying $750 and a second stipend—also a research assistantship—worth $2,500 for the 1962-1963 academic year ($1,300 for tuition and $1,200 for living expenses). Gifts from parents and relatives totaling $500 were received by Barclay and his wife during the twelve month period. In addition, his wife's job paid $3,600 before taxes. Interest from a savings account and dividends from stock yielded fifty dollars. The final source of income was the sale of stock; it entailed a reduction in assets but it added another $500 to income. Thus Barclay's total income for the twelve month period was $7,900.

OUTGOING: Barclay's academic expenses amounted to $1,525. Of this sum $1,300 was paid out for tuition and fees (this was covered by the second stipend); texts, reference books and journals—$150; and instruments, equipment, supplies—$75. His estimated living expenses including rent, clothing and food, came to $3,400. Barclay bought a new car in April, 1962—before the time period under consideration. Cost of maintaining and operating the car plus depreciation totaled $500. This does not include the twelve monthly payments which will have been made through June, 1963 during the twelve month period. Each payment was $70 resulting in a reduction in liabilities of $840 by the end of June, 1963 (He did not know how much of the payment was for interest and put the entire sum under "reduction in liabilities." This is O.K.) Another $410 was paid for health and medical care for the family. Other expenses including taxes, entertainment, etc., came to $1,225. Barclay's total expenses for the twelve month period were $7,900, a sum which equals his income.

(Over)

## ESTIMATED FINANCES FOR THE YEAR BEGINNING JULY 1, 1962 AND ENDING JUNE 30, 1963

### INCOMING

ANNUAL AMOUNTS IN DOLLARS

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME REMAINING TILL JUNE 30, 1963

APPROXIMATIONS ARE O.K.!

**I. YOUR STIPEND INCOME**

TRANSFER THESE AMOUNTS, IF ANY, FROM QUESTION 29D

| | |
|---|---|
| 1st stipend | $ 750 |
| 2nd stipend | $ 2500 |
| 3rd stipend | $ — |

TOTAL → $ 3250

**II. OTHER INCOME**

| | |
|---|---|
| *Part time and full time work (before taxes) | $ — |
| Parents and relatives (gifts) | $ 500 |
| Spouse's university job (before taxes) | $ — |
| Spouse's non-university job (before taxes) | $ 3600 |
| Spouse's stipends | $ — |
| Veterans and GI benefits | $ — |
| Income from military service | $ — |
| †Other—excluding IV and V below | $ 50 |

TOTAL → $ 4150

**III. TOTAL OF I AND II** → $ 7400

**IV. REDUCTION IN ASSETS (Amounts):** $ 500

withdraw savings; sell stock, car, house, property, etc.

**V. ADDITION TO LIABILITIES (Amounts):**

| | |
|---|---|
| National Defense Education Act loan | $ — |
| Other educational loans (e.g., deferred tuition) | $ — |
| Other: installment debt, mortgages obtained since July, 1962 | $ — |

TOTAL → $ —

**VI. TOTAL OF III, IV, AND V** → $ 7900

**NOTE: Total IN (VI) and Total OUT (XII) should be equal. If not, please revise the amounts you have entered.**

*If you have a faculty appointment as instructor, assistant professor, etc., include this salary.
†Other income includes interest from savings accounts; dividends from stocks and bonds; income from property; royalties; honoraria; consultation and other professional activity, etc.

Deck 4

## ESTIMATED FINANCES FOR THE YEAR BEGINNING JULY 1, 1962 AND ENDING JUNE 30, 1963

### OUTGOING

ANNUAL AMOUNTS IN DOLLARS

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME REMAINING TILL JUNE 30, 1963

APPROXIMATIONS ARE O.K.!

**VII. ACADEMIC EXPENSES (SELF)**

A. TUITION AND FEES

| | |
|---|---|
| Covered by stipend | $ 1300 |
| Covered by cost of education allowances | $ — |
| Not covered by above | $ — |

TOTAL → $ 1300

B. OTHER ACADEMIC EXPENSES

INCLUDE AMOUNTS COVERED BY STIPEND

| | |
|---|---|
| Texts, reference books, journals | $ 150 |
| Instruments, equipment, supplies | $ 75 |
| Thesis expenses | $ — |
| Other, including tutorial costs | $ — |

TOTAL → $ 225

**VIII.** TOTAL OF VII A AND VII B → $ 1525

**IX. OTHER EXPENSES (SELF AND DEPENDENTS)**

INCLUDE AMOUNTS COVERED BY STIPEND

| | |
|---|---|
| *Living expenses | $ 3400 |
| †Transportation | $ 500 |
| ‡Health and medical care | $ 410 |
| §Other, excluding X and XI below | $ 1225 |

TOTAL → $ 5535

**X. ADDITION TO ASSETS (Amounts):**
Amount added to savings: buy stock, total value of house or car purchased since July, 1962, etc. $ —

**XI. REDUCTION IN LIABILITIES (Amounts):**
Amount repaid on loan; principal payments on car or house purchased prior to July, 1962; payments for deferred tuition; time payments, etc. $ 840

**XII.** TOTAL OF VIII, IX, X, AND XI → $ 7900

NOTE: Total IN (VI) and Total OUT (XII) should be equal. If not, please revise the amounts you have entered.

*Housing; food, beverages; personal maintenance; utility bills, etc.
†Local public transportation; operate and maintain own car; travel etc.
‡Self and family: health insurance premiums; medical and dental bills; drugs, etc. Exclude expenses covered by health insurance.
§Entertainment, gifts, contributions; insurance, taxes; purchase of house furnishings and consumer durables; spouse's academic expenses, etc.

Deck 5

SAMPLE FINANCIAL INVENTORY

81 ENGLISH AND JOURNALISM
English & Literature
Journalism

80 FINE & APPLIED ARTS
Art, general
Music
Speech & Dramatic Art
Fine & Applied Art, all other

FOREIGN LANGUAGE & LITERATURE
84 Linguistics
82 Latin and/or Classical Greek
84 French
84 Italian
84 Portugese
84 Spanish
84 Philogy & Lit. of Romance Lang.
84 German
84 Other Germanic Languages
84 Philology & Lit. of Germanic Languages
84 Arabic
84 Chinese
84 Hebrew
84 Hindi and Urdu
84 Japanese
84 Russian
84 Other Slavic languages
84 Foreign Languages, all other

46 FORESTRY

04 GEOGRAPHY

HEALTH PROFESSIONS
2X Hospital Administration
22 Nursing and/or Public Health Nursing
26 Occupational Therapy
23 Optometry
24 Pharmacy
25 Physical Therapy, Physiotherapy
2X Public Health
2X Radiologic Technology
20 Clinical Dental Science (beyond D.D.S. or D.M.D.)
21 Clinical Medical Sciences (beyond M.D.)
27 Clinical Veterinary Medical Sci. (beyond D.V.M.)
2X Health Professions, all other

98 HOME ECONOMICS
Home Economics, general
Child Development, Family Relations
Clothing and Textiles
Foods and Nutrition
Institution Mgt., Institution Adm.
Home Economics, all other

95 LAW

88 LIBRARY SCIENCE

MATHEMATICAL SUBJECTS
09 Mathematics
09 Statistics

PHILOSOPHY
85 Philosophy
85 Scholastic Philosophy

PHYSICAL SCIENCES
0X Physical Sciences, general
01 Astronomy
02 Chemistry
07 Metallurgy
08 Meteorology
0X Pharmaceutical Chemistry
03 Physics

Earth Sciences
05 Geology
05 Geophysics
06 Oceanography
00 Earth Sciences, all other

Physical Sciences
00 Physical Sciences, all other

PSYCHOLOGY
70 Clinical Psychology
66 Counseling & Guidance
71 Social Psychology
67 Educational Psychology
72 Industrial & Personal Psychology
73 General & Experimental Psychology
74 Other Psychological Fields

SOCIAL SCIENCES

Basic Social Sciences
7X Social Sciences, general
7X American Civilization, American Culture
75 Anthropology
77 Area Studies, Regional Studies
76 Economics
83 History
78 International Relations
78 Political Science or Government
79 Sociology
7X Basic Social Sciences, all other

Applied Social Sciences
76 Agricultural Economics
78 Foreign Service Programs
72 Industrial Relations
93 Public Administration
96 Social Work, Social Administration
7X Applied Social Sciences, all other

BROAD GENERAL CURRICULUMS & MISCELLANEOUS FIELDS
80 Arts, general program

Other Fields and Occupations
94 Foreign Service (Code as occupation only, not field of study)
98 Home Economics (Code either as a field of study or as an occupation if you mean working as a home economist for pay)
99 Housewife (Code as occupation only, not as field of study)
87 Radio-Television, Communications
89 Theology, Religion (Employment as a Clergyman or religious worker)

X0 Field of Study or Job Which has no Near Equivalent in This List (If you use this code, please describe your field in a word or two under the questions where it applies)

X1 Do not expect to be either employed full time or to be a Housewife. (Code only for questions about careers, not for field of study)

# STIPEND INFORMATION

Questions 29, 34, 35, 40B and 52F refer to source and types of *stipends*. This includes any scholarship, fellowship, assistantship, or other stipend.

EXCLUDE. . . . loans and gifts from parents, relatives or any other source;
exclude work performed as an instructor or assistant professor

INCLUDE. . . . waiver or reduction in tuition and fees even if you do not receive the money directly

include waiver or reduction of tuition and fees under cost of education allowances received by the university

INCLUDE. . . . income from teaching or research in your field of study if paid as a graduate assistant by the school where you are enrolled or an affiliated organization

include payment in kind, e.g., room and board

IF. . . . the funds are administered by the school you are attending but come from another source, e.g., a Federal agency such as the National Institutes of Health or the National Science Foundation, be sure to enter the code number for the Federal agency providing the funds (do not enter the code number for the school you are attending).

FOR EXAMPLE. . . If the stipend is a research assistantship from your school, write the code number (52) in the boxes provided, such as:

| 5 | 2 |
|---|---|

| Source of Stipend | | | Type of Stipend: Duty Free Stipend — Equal to or less than my tuition bill | Type of Stipend: Duty Free Stipend — For tuition plus cash grant | Type of Stipend: Stipend Requiring Duties — Research Assistantship | Type of Stipend: Stipend Requiring Duties — Teaching Assistantship |
|---|---|---|---|---|---|---|
| U.S. Federal Government (directly or through your school) | Atomic Energy Commission | | 00 | 20 | 40 | 60 |
| | Department of Defense | | 01 | 21 | 41 | 61 |
| | National Science Foundation | | 02 | 22 | 42 | 62 |
| | Veterans Administration (Exclude GI Bill) | | 03 | 23 | 43 | 63 |
| | National Aeronautics and Space Administration | | 04 | 24 | 44 | 64 |
| | Office of Education | National Defense Education Act | 05 | 25 | 45 | 65 |
| | | Other Office of Education | 06 | 26 | 46 | 66 |
| | Public Health Service | National Institutes of Health Fellowship Program | 07 | 27 | 47 | 67 |
| | | N.I.H. Training Grant and Traineeship Program | 08 | 28 | 48 | 68 |
| | Other PHS | | 09 | 29 | 49 | 69 |
| | Other Federal Government | | 0X | 2X | 4X | 6X |
| Private Foundation, Philanthropic Organization, etc. | | | 10 | 30 | 50 | 70 |
| Industrial or Business Corporation or Firm | | | 11 | 31 | 51 | 71 |
| Directly from the school that I am now attending | | | 12 | 32 | 52 | 72 |
| The school I am attending, but I do not know the primary source | | | 13 | 33 | 53 | 73 |
| State or local government (U.S.) | | | 14 | 34 | 54 | 74 |
| Foreign government and other foreign sources | | | 15 | 35 | 55 | 75 |
| Other | | | 16 | 36 | 56 | 76 |

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Chicago 37, Illinois

Survey 468
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# NATIONAL SCIENCE FOUNDATION

# STUDY OF GRADUATE STUDENT FINANCES

## INSTRUCTIONS

**Please Read Before You Begin**

1. Answer every question unless you are specifically instructed that a given question does not apply to you.

2. When answering questions with a limited number of alternatives, please choose the statement which comes closest to describing your circumstances or personal history, even if it does not fit your situation precisely.

3. Select your answer to the questions by CIRCLING the number or letter next to the alternative of your choice. For example:

   I am now . . . (Circle one)

   A student in high school . . . . . . . . . . . . . . . . . . X    73/R

   A student in college . . . . . . . . . . . . . . . . . . . . 1

   A student in graduate or professional school . 2

4. The numbers and letters are necessary for processing the data and have been arbitrarily chosen. The numbers in the far right margin (73/R) should be ignored.

**THANK YOU VERY MUCH FOR YOUR HELP**

Budget Bureau Number 99-6306
Approval Expires October 30, 1963

# YOUR STUDIES

In this section we are interested in finding out about your past, present and future studies.

1. Please indicate the highest degree you now hold, the next degree you expect to receive, and the highest degree you expect to hold eventually:

| | None | Bachelor's (Undergraduate) e.g. BA, BS, BE, B Chem Eng. | First Professional, e.g. LLB, MD, etc. | Master's, e.g. MA, MS, MSW, M Civ. Eng. | Doctorate e.g. PhD, EdD, JSD, etc. | |
|---|---|---|---|---|---|---|
| A. Highest degree you now hold (Circle one) | 5 | 6 | 7 | 8 | 9 | 11/4 |
| B. Next degree you expect to receive (Circle one) | 5 | 6 | 7 | 8 | 9 | 12/4 |
| C. Highest degree you expect to hold (Circle one) | 5 | 6 | 7 | 8 | 9 | 13/4 |

2. What is your best guess as to when you will receive: (If you are not working for a degree, skip to Question 3)

A. The degree for which you are now working? 14-15/XX

Month__________ Year 19_____ 16-17/XX

B. The highest degree you expect to hold? 18-19/XX

Month__________ Year 19_____ 20-21/XX

3. What system does your school use? (Circle one)

Quarter system .......................................7 22/6
Trimester system .....................................8
Semester system ......................................9

4. Please indicate which category best describes your enrollment status for each of the following academic terms. *(Circle one in each of columns A, B, C, and D)*

| | | | A (Circle one) | B (Circle one) | C (Circle one) | D (Circle one) |
|---|---|---|---|---|---|---|
| | | *IF QUARTER OR TRIMESTER SYSTEM:* → | Summer '62 | Fall '62 | Winter '63 | Spring '63 |
| | | *IF SEMESTER SYSTEM:* → | Summer '62 | Fall '62 | Spring '63 | Circle 8 Below |
| ENROLLED | In a program in which "full-time study" is possible and carrying: | full course load or greater | 0 | 0 | 0 | 0 |
| | | less than a full course load | 1 | 1 | 1 | 1 |
| | | no courses, enrolled only for completion of thesis, independent research, etc. | 2 | 2 | 2 | 2 |
| | in night school or other program in which full-time study is impossible: | | 3 | 3 | 3 | 3 |
| | For correspondence courses | | 4 | 4 | 4 | 4 |
| OR | | | | | | |
| NOT ENROLLED | BECAUSE | Interrupting my studies temporarily | 5 | 5 | 5 | 5 |
| | | No intention of going on further | 6 | 6 | 6 | 6 |
| | | Completing thesis, doing independent research, etc. | 7 | 7 | 7 | 7 |
| | | On vacation | 8 | | | |
| | | My school is on semester system | | | | 8 |
| | | Other *(Circle and specify)* | 9 | 9 | 9 | 9 |
| | | | 23/X | 24/X | 25/X | 26/X |

5. Which of the following degree requirements are you working on this term? *(Circle any that apply)*

Taking courses or seminars .................... X  27/Y
Preparing for comprehensive or "qualifying" examinations .................... 0
Language examination .................... 1
Research for and preparation of my thesis .................... 2
Other *(Circle and specify)* ____________ 3
None .................... 4

6. What is considered a full course load at your school and how many courses are you taking this term? If load is measured in hours, translate as best you can. *(Circle one in each column)*

| | Full Course Load Is: *(Circle one)* | Number of Courses I Am Taking: *(Circle one)* |
|---|---|---|
| Five courses or more | 5 | 5 |
| Four courses | 4 | 4 |
| Three courses | 3 | 3 |
| Two courses | 2 | 2 |
| One course | 1 | 1 |
| None | | 0 |
| | 28/6 | 29/6 |

7. On the average, how many hours a week were you engaged in academic study this term? Include courses, thesis work, practicum, study time, etc. required for the degree. *(Circle one)*

| None | Less than 10 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | More than 69 | |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 30/9 |

8. Which of the following best describes your <u>primary</u> reason for enrolling in your current study program? *(Circle one)*

Definitely intend to apply enrollment to a graduate degree .................... X  31/Y
Primary reason not necessarily to get a graduate degree but:
...to pass certification or other requirements for teaching or counseling in primary or secondary school system .................... 0
...to gain specific "job knowledge" for my present or future employer .................... 1
...to enhance my own knowledge regardless of degree, career, or job benefits .................... 2
...other *(Circle and specify)* ____________ 3

9. How many calendar years elapsed between the time you received your bachelors degree and the start of your graduate studies? *(Circle one)*

| Less than 1 year | 1 year | 2 years | 3 years | 4 years | 5-9 years | 10 or more years | |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 32/7 |

10. During which of the previous academic years were you enrolled for graduate study? *(Circle as many as apply in the first column and one in each of the other columns)*

| | Prior to June '58 | July '58– June '59 | July '59– June '60 | July '60– June '61 | July '61– June '62 |
|---|---|---|---|---|---|
| Enrolled full time for two or more terms of graduate study | 5 | X | 5 | X | 5 |
| Enrolled full time for only one term of graduate study | 6 | 0 | 6 | 0 | 6 |
| Not enrolled full time any terms but enrolled part time at least one term of graduate study | 7 | 1 | 7 | 1 | 7 |
| Not enrolled in graduate school during the year | 8 | 2 | 8 | 2 | 8 |
| Had not yet begun my graduate studies | 9 | 3 | 9 | 3 | 9 |
| | 33/4 | 34/Y | 35/4 | 36/Y | 37/4 |

11. Which of the following best describes your progress in academic study? *(Circle one)*

| | | |
|---|---|---|
| I have completed less than one full year of required work for an advanced degree | X | 38/y |
| I have completed one or more years of work but I do not expect to receive a doctor's degree by June, 1963 | 0 | |
| I expect to complete all doctoral requirements by June, 1963 | 1 | |

12. What proportion of course work on your degree will you have completed by June, 1963? *(Circle one)*

| | | |
|---|---|---|
| All of it | 6 | 39/5 |
| About three-quarters of my course work | 7 | |
| Half of my course work but less than three-quarters | 8 | |
| Less than half of my course work | 9 | |

13. What are your eventual plans concerning the doctoral degree? *(Circle one)*

| | | |
|---|---|---|
| I definitely plan to get a doctorate | 1 | 40/0 |
| I might eventually get a doctorate, but my plans aren't definite | 2 | |
| I do not plan to get a doctorate | 3 | |
| It is too early in my graduate work to have an opinion | 4 | |

14. Given your current aptitudes and interests, how much difference do you think getting a Ph.D. would make in your ability to attain the following? *(Circle one in each row)*

| | A Ph.D. will help . . . | | | |
|---|---|---|---|---|
| | a great deal | a moderate amount | hardly any | |
| A. Holding a job which I enjoy a great deal *(Circle one)* | 7 | 8 | 9 | 41/6 |
| B. Making a contribution to knowledge *(Circle one)* | X | 0 | 1 | 42/Y |
| C. Doing my job very well *(Circle one)* | 3 | 4 | 5 | 43/2 |
| D. Making a good living *(Circle one)* | 7 | 8 | 9 | 44/6 |
| E. Feeling that I know more than almost anybody else about some subject *(Circle one)* | X | 0 | 1 | 45/y |
| F. Attaining a position of authority *(Circle one)* | 3 | 4 | 5 | 46/2 |
| G. Making a contribution to humanity *(Circle one)* | 7 | 8 | 9 | 47/6 |

15. What is the letter grade that best represents your grade point average so far in your graduate studies? *(Circle one)*

IF LETTER GRADES ARE NOT GIVEN, translate into letter grades as best you can.

| *(Circle one)* | A | A− | B+ | B | B− | C+ | C | C− | Less than C− | No grades received yet | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 48/X |

16. IF YOU HAVE A MASTER'S DEGREE, ANSWER A, B, AND C BELOW: IF YOU DO NOT HAVE A MASTER'S DEGREE, SKIP TO QUESTION 17.

A. When did you receive it? 49-50/RR

Month ______________ Year 19____ 51-52/RR

B. Where did you receive this degree? *(Circle one)*

| | | |
|---|---|---|
| The school I'm now attending | 1 | 53/R |
| A different school | 2 | |

C. IF DIFFERENT: Please write its name and location below.

| School | City | State (Country if non-U.S. |
|---|---|---|
| | | |

17. IF YOU HAVE A BACHELOR'S DEGREE, ANSWER A, B, C, AND D BELOW: IF YOU DO NOT HAVE A BACHELOR'S DEGREE, SKIP TO QUESTION 18.

A. When was your (last) bachelor's degree obtained? 54-55/RR

Month ________________ Year 19____ 56-57/RR

B. Where did you receive this degree? *(Circle one)*

The school I am now attending .......................... 1 58/R
A different school .......................... 2

C. IF A DIFFERENT SCHOOL, please write its name and location below.

| School | City | State (Country if non-U.S.) |
|---|---|---|
| | | |

D. What was your over-all (cumulative) grade point average for work leading to this bachelor's degree?

IF LETTER GRADES WERE NOT GIVEN, translate into letter grades as best you can.

| | A | A− | B+ | B | B− | C+ | C | C− | D+ | D or less | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *(Circle one)* | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 59/R |

18. Are you.... *(Circle any which apply)* 60/2

an alien studying in this country on a non-immigrant visa .......................... 1
a member of a religious order which maintains you .......................... 2
in the military service (full-time career) .......................... 3
an unclassified and "special" student, i.e., you have not met the usual requirements for graduate standing, or you do not intend to become a formal candidate for a degree beyond the bachelor's .. 4
a student enrolled exclusively in courses conducted by correspondence, by radio, or television. .. 5
a holder of a doctorate and doing postdoctoral work .......................... 6
none of the above .......................... 7

## FIELDS AND CAREERS

The list of fields on pages 2 and 3 in the covering letter is to be used in answering Questions 19 through 25, 42D and I and 43D. As you choose the field from the list which is your answer to one of the questions below, please write the two numbers or letters of that field in the double box at the right of that question. For example, if "Mechanical Engineering" best describes your current major field, write its code number (16) in the double box at the end of Question 19, thus: | 1 | 6 |

19. Your current major field of study? [ | ] 61-62/XX

20. Your undergraduate major field of study? [ | ] 63-64/XX

21. If you now hold Master's degree, in which field? (Write "yy" in the double box if you do not hold Master's degree) [ | ] 65-66/XX

22. If you now hold a doctorate, in which field? (Write "yy" in the double box if you do not hold a doctor's degree) [ | ] 67-68/XX

23. Major field for highest degree you expect to hold? [ | ] 69-70/XX

24. Your anticipated career field? (Please give the code number for what you expect to be your long-run career and ignore any stop-gap job, or temporary military service which might precede it)

IF YOU ARE A WOMAN: Use code number for "Housewife" (99) only if you do not expect to work at all. [ | ] 71-72/XX

IN ADDITION to writing the code number in the double box, please describe your anticipated career field in a few words below.

________________________________________

________________________________________

25. A. What if you were free to choose any professional or graduate field from the list, ignoring obstacles such as finances, time for training, admission requirements, etc.. Would you still choose the field just listed?

| | | |
|---|---|---|
| Yes, I would still strongly prefer it to any other *(Circle "X" and skip to Question 26)* | X | 73/Y |
| I could be tempted by one or more alternatives | 0 | |
| No, I would prefer one or more alternatives | 1 | |

B. Which of these alternative fields would you like the most? *(Please indicate the field in the double box)* [ ][ ] 74-75/RR

26. A. After completing your studies, which of the following do you expect as your first employer? as your long-run future employer? *(Circle one in each column)* **Begin Deck 2**

| | First Employer | Long-run Career Employer |
|---|---|---|
| I plan to be self-employed, or in business owned by my family | Y | Y |
| Private company | X | X |
| Professional partnership | 0 | 0 |
| Research organization or institute | 1 | 1 |
| College or University | 2 | 2 |
| Junior College or Technical Institute | 3 | 3 |
| Elementary or Secondary School or School System | 4 | 4 |
| Hospital, Clinic, Church, Welfare, or other non-profit organization | 5 | 5 |
| Federal Government (U.S.) (Other than above) | 6 | 6 |
| State or Local Government (Other than above) | 7 | 7 |
| Other *(Circle and specify)* | 8 | 8 |
| Do not expect employment | 9 | 9 |
| | 11/R | 12/R |

B. Is the employment described in "A" above located....

| | First | Long-run |
|---|---|---|
| in the United States? | 8 | 8 |
| in a foreign country? | 9 | 9 |
| | 13/7 | 14/7 |

C. The following activities cut across a number of specific jobs. Which ones do you anticipate will be an important part of your long-run career work? *(Circle any which apply)*

| | | |
|---|---|---|
| Teaching | 2 | 15/1 |
| Research and development | 3 | |
| Administration or management | 4 | |
| Service to patients or clients | 5 | |
| None of the above | 6 | |

27. Which of these characteristics would be very important to you in picking a job or career? *(Circle as many as apply)*

| | | |
|---|---|---|
| Making a lot of money | X | 16/Y |
| Opportunities to be original and creative | 0 | |
| Opportunities to be helpful to others or useful to society | 1 | |
| Avoiding a high pressure job which takes too much out of you | 2 | |
| Living and working in the world of ideas | 3 | |
| Freedom from supervision in my work | 4 | |
| Opportunities for moderate but steady progress rather than the chance of extreme success or failure | 5 | |
| A chance to exercise leadership | 6 | |
| Opportunity to work with people rather than things | 7 | |
| None of the above | 8 | |

28. A. In the long run, would you rather be known and respected.... *(Circle one)*

| | | |
|---|---|---|
| where you work | X | 17/Y |
| (OR) | | |
| among people in your profession | 0 | |

B. In the long run, would you rather be respected by.. *(Circle one)*

| | | |
|---|---|---|
| clients (students, customers) you serve | 5 | 18/4 |
| (OR) | | |
| people (colleagues) with whom you work | 6 | |

THE FOLLOWING QUESTIONS ASK ABOUT ACADEMIC FINANCES DURING THE 12 MONTHS FROM JULY, 1962 THROUGH JUNE, 1963

## ACADEMIC FINANCES

29. During the academic year July, 1962 through June, 1963, did you receive a stipend (scholarship, fellowship, research or teaching assistantship) or similar financial aid to students? *(Circle one)*

EXCLUDE... loans and gifts from parents, relatives or any other source; exclude work performed as an instructor or assistant professor

INCLUDE... waiver or reduction in tuition fees even if you do not receive the money directly
include waiver or reduction of tuition and fees under cost of education allowances received by the university

INCLUDE... income from teaching or research in your field of study if paid as a graduate assistant by the school where you are enrolled or affiliated organization
include payment in kind, e.g., room and board

IF the funds are administered by the school you are attending but come from another source, e.g. a Federal agency such as the National Science Foundation or the National Institutes of Health, be sure to enter the code number for the Federal agency providing the funds.

Yes ........................................ 8 — 19/7
No ........................................ 9

If NO: Skip to Question 33.
If YES: On page 4 of the covering letter is a set of code numbers that describe stipends by source and type. *Use the code numbers to answer the following questions:*

A. First stipend (If you have two or more, enter the code number of the one which has the highest value.) [ ][ ] — 20-21/XX

B. Second stipend?
If YES: Enter its code number in the double box
If NO: Write "yy" in the double box [ ][ ] — 22-23/XX

C. Third stipend?
If YES: Enter its code number in the double box
If NO: Write "yy" in the double box [ ][ ] — 24-25/XX

D. Please estimate the total value you received from each stipend during the period July, 1962 through June, 1963. Include your estimate of the value of a tuition scholarship, or reduction or waiver in tuition and fees (even if you received no money), income from teaching or research in your field if you were paid as a graduate assistant by the school or affiliated organization where you are enrolled.

(1) My first stipend: $
(2) My second stipend: $
(3) My third stipend: $

E. How many months of the twelve month period did each of these stipends cover?
(1) My first stipend: Months [ ] — 26-27/RR
(2) My second stipend: Months [ ] — 28-29/RR
(3) My third stipend: Months [ ] — 30-31/RR

30. A. If you hold a duty stipend, what duties are required of you? *(Circle any which apply in each column)*

| | First Stipend | Second Stipend | Third Stipend |
|---|---|---|---|
| Lead discussion or laboratory sections | 4 | Y | 4 |
| Lead seminars | 5 | X | 5 |
| Work on research project directed by someone else | 6 | 0 | 6 |
| Instruct undergraduate sections | 7 | 1 | 7 |
| Other duties *(Circle and specify)* | 8 | 2 | 8 |
| No duties are required | 9 | 3 | 9 |
| | 32/R | 33/R | 34/R |

B. On the average, how many hours per week do you give to these duties? *(If no duties, enter YY in box)* Hours [ ] 35-36/RR [ ] 37-38/RR [ ] 39-40/RR

C. Aside from the purely financial aspects of the stipend, how would you rate these duties as a training experience? *(Circle one)*

An unusual opportunity for training in my field ........................................ 1 — 41/R
A good opportunity for training in my field ........................................ 2
A fair opportunity for training in my field ........................................ 3
Irrelevant for training in my field ........................................ 4
I have no duties ........................................ 5



31. Did having a stipend this year lead you to do any of the following? *(Circle as many as apply)*

Shift field of specialization to area where more or better stipends were available ........ Y — 42/R
Attend this university although I preferred a different one ........ X
Choose a master's thesis topic which didn't represent my real interest ........ 0
Choose a doctoral thesis topic which didn't represent my real interest ........ 1
Enroll part time although I would have preferred full-time studies ........ 2
Enabled me to start graduate work sooner than otherwise possible ........ 3
Allowed me to do the kind of research I really wanted ........ 4
Choose this university from equally attractive ones ........ 5
Take too long to get my degree because of duties attached to my stipend ........ 8
None of the above ........ 9

32. A. In order to hold any of your stipends and receive installments of the grant, are you required to maintain a specified grade point average? *(Circle one)*

No ........................................ 7 — 43/R
Don't know ........................................ 8
Yes ........................................ 9

B. IF YES: What is it? If letter grades are not given, translate as best you can. *(Circle one)*

| A | A— | B+ | B | B— | C+ | C or less | Don't know |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 9 |

44/R

33. IF YOU HAVE A STIPEND THIS YEAR, SKIP TO QUESTION 34.
Did not having a stipend this year lead you to do any of the following: *(Circle as many as apply)*

Shift field of specialization to area where more stipends were available ........ Y — 45/R
Attend this university although I preferred a different one ........ X
Choose a master's thesis topic which didn't represent my real interest ........ 0
Choose a doctoral thesis topic which didn't represent my real interest ........ 1
Enroll part time although I would have preferred full-time studies ........ 2
Delay graduate study after getting the bachelor's degree ........ 6
Drop out of graduate school temporarily ........ 7
Take too long to get my degree because of need for part-time work ........ 8
None of the above ........ 9

34. Did you decline any stipend that you were offered for the academic year 1962-1963? *(See page 4 of covering letter for a set of code numbers that describe stipends by source and type.)*
IF NO: Write "YY" in the double box. [ ][ ] — 46-47/XX
IF YES: Enter the code number for the one you were offered. (If you were offered more than one, give the code number for the "best" one.)

35. Did you apply for any stipend during the academic years 1962-1963 for which you were not accepted?
IF NO: Write "YY" in the double box. [ ][ ] — 48-49/XX
IF YES: Enter its code number. (If more than one rejection, give the code number for one stipend you would have preferred.)

36. A. Did you have a stipend for graduate study between July 1961 and June 1962? *(Circle one)*

Yes, I always had one (Circle "0" and answer Column (A) below) ........ 0 — 50/X
No, I never had one (Circle "1" and answer Column (B) below) ........ 1
I was an undergraduate student during this period. *(Circle "2" and skip to Question 37)* ........ 2

B. What did getting (not getting) a stipend between July, 1961 and June, 1962 lead you to do? *(Circle any which apply)*

| | July, 1961-June, 1962 (A) Getting a stipend | July, 1961-June, 1962 (B) Not getting stipend |
|---|---|---|
| Shift field of specialization to area where more or better stipends were available | Y | Y |
| Attend this university although I preferred a different one | X | X |
| Choose a master's thesis topic which didn't represent my real interest | 0 | 0 |
| Choose a doctoral thesis topic which didn't represent my real interest | 1 | 1 |
| Enroll part time although I would have preferred full-time studies | 2 | 2 |
| Enabled me to start graduate work sooner than otherwise possible | 3 | 3 |
| Allowed me to do the kind of research I really wanted | 4 | 4 |
| Choose this university from equally attractive ones | 5 | 5 |
| Delay graduate study after getting the bachelor's degree | 6 | 6 |
| Drop out of graduate school temporarily | 7 | 7 |
| Take too long to get my degree because of need for part-time work | 8 | 8 |
| None of the above | 9 | 9 |
| | 51/R | 52/R |

## YOUR PLANS NEXT YEAR

37. What will you be doing this Fall? *(Circle as many as apply)* 53/X

| | | |
|---|---|---|
| Working as a research assistant | 0 | |
| Working as a teaching assistant | 1 | |
| Working full time at a type of job I expect to be my long-run career field | 2 | |
| In the military service (full-time active duty) | 3 | |
| Working full time at civilian job which will probably not be my long-run career | 4 | |
| Housewife | 5 | |
| Graduate study in an arts and science field (physical science, biological science, social science, humanities) | 6 | |
| Graduate study in a professional field (engineering, education, agriculture, social work, law, medicine, etc.) | 7 | |
| Working part time other than as research or teaching assistant | 8 | |
| Other *(Circle and Specify)* ______ | 9 | |

38. How definite are the plans encircled in Question 37? *(Circle one)* 54/Y

| | |
|---|---|
| Quite definite | X |
| Fairly definite, but subject to change | 0 |
| Quite indefinite | 1 |

39. A. Which of the following best describes your studies during the coming year (1963-64)? 55/4

Will continue studies in . . . *(Circle one)*

| | |
|---|---|
| same field, same school | 5 |
| *same field, different school | 6 |
| *different field, same school | 7 |
| *different field, different school | 8 |
| *will not be enrolled next year | 9 |

B. If you plan to go to school in the coming year: Will you go. . . . *(Circle one)* 56/0

| | |
|---|---|
| full-time? | 1 |
| part-time? | 2 |

C. If not enrolled next year: Why? *(Circle any which apply)* 57/5

| | |
|---|---|
| Work for degree will be completed *(Circle and skip to Question 42)* | 6 |
| Studying in absentia | 7 |
| *Interrupting my studies temporarily | 8 |
| *Quitting my studies short of the degree | 9 |

D. Why are you making the changes indicated (*) in A and C above?

______ 58/Y

______ 59/Y

40. A. Are you getting a stipend next year? 60/1

| | |
|---|---|
| Yes | 2 |
| No *(Circle "3" and skip to Question 41)* | 3 |
| Maybe *(Circle "4" and skip to Question 41)* | 4 |

B. IF YES: See page 4 of the covering letter for a set of code numbers that describe stipends by source and type.

(1) First stipend? If you have two or more, enter the code number of the one that has the highest value. [ ][ ] 61-62/RR

(2) Second stipend?
IF YES: Enter its code number.
IF NONE: Write "yy" in the double box [ ][ ] 63-64/RR

(3) Third stipend?
IF YES: Enter its code number.
IF NONE: Write "yy" in the double box [ ][ ] 65-66/RR

C. Please estimate the total amount you will receive from each stipend during the period July, 1963 through June, 1964. Include your estimate of the value of a tuition scholarship, or reduction or waiver in tuition or fees (even if you received no money). Income from teaching or research in your field if you were paid as a graduate assistant by the school or affiliated organization where you are enrolled.

| | | |
|---|---|---|
| (1) My first stipend | $ | 67-68/RR |
| (2) My second stipend | $ | 69-70/RR |
| (3) My third stipend | $ | 71-72/RR |

41. Will getting (not getting) a stipend influence your plans for next year?

Yes .......... 8 — 73/7
No .......... 9

IF YES: What is the influence?

______________________________ 74/X

______________________________ 75/X

## YOUR EMPLOYMENT AND EARNINGS: JULY, 1962 THROUGH JUNE, 1963

Begin Deck 3

42. A. Do (Did) you have employment other than that connected with a stipend during this academic year, i.e., June, 1962 through July, 1963? (Circle one)

EXCLUDE... occasional jobs of only a few days' duration
INCLUDE... self-employment
INCLUDE... summer 1962 employment

Yes .......... 1 — 11/0
No (Circle "2" and skip to Question 43) .......... 2

B. How many months during the 12-month period were you working....

35 hours per week or more? Months: ________ 12-13/XX
20 - 34 hours per week? Months: ________ 14-15/XX
10 - 19 hours per week? Months: ________ 16-17/XX
Fewer than 10 hours per week? Months: ________ 18-19/XX
(Please make total equal 12 months)

C. Was there more than one job? (Circle one) — 20/0

Yes .......... 1
No .......... 2

IF YES: Consider the job you held longest during the twelve month period as the one you are describing below in parts D through H.

D. What field best describes this job? *(Inside the covering letter is a list of fields of employment and study. Enter the code number that best describes your job.)*

[ ][ ] 21-22/XX

E. This is.... (Circle one) — 23/3

the kind of job I want in my anticipated career field .......... 4
a job which is relevant to my anticipated career field but not the kind I want .......... 5
a job which has nothing to do with my anticipated career field .......... 6

F. Which of the following best describes your employer? *(Circle any which apply)* — 24/R

I am self-employed, or in business owned by my family .......... Y
Private company .......... X
Professional partnership .......... 0
Research organization or institute .......... 1
College or University at which I am enrolled .......... 2
Another college or university .......... 3
Junior College or Technical Institute .......... 4
Elementary or secondary school or school system .......... 5
Hospital or clinic, church, welfare, or other non profit organization .......... 6
Federal Government (U.S.) (Other than above) .......... 7
State or Local Government (Other than above) .......... 8
Other (Circle and specify) ________ 9

G. Which of the following duties best describe the job? *(Circle any which apply)* — 25/Y

Teaching .......... X
Research and development .......... 0
Administration and management .......... 1
Service to patients or clients .......... 2
Other (Circle and specify) ________ 3

H. Are you currently working on this job? (Circle one) — 26/4

Yes (Circle "5" and skip to Question 43) .......... 5
No .......... 6

I. Do you have a job at which you currently working? Exclude duties connected with a stipend. — 27/R

Yes .......... 8
No .......... 9

IF YES: What field best describes your current job? *(Enter the code number in the double box.)*

[ ][ ] 28-29/RR



43. A. Have you ever held a *regular full-time* job of more than 6 months duration? (Circle one) — 30/Y

Yes, my current job .......... 0
Yes, but not now .......... 1
No (Circle "X" and skip to Question 44) .......... X

B. What were the monthly earnings before taxes of the highest paid regular full-time job you ever held?

$ ________ 31-32/YY

C. In which field was this highest paid regular full-time job? (Circle one) — 33/5

It is the job I'm now holding .......... 6
In the field of current employment, but it was a different job .......... 7
Not in the field of current employment .......... 8
In none of the above .......... 9

D. IF NOT IN FIELD OF CURRENT EMPLOYMENT OR NOT NOW EMPLOYED: *Enter the code number from the list that best describes this job.*

[ ][ ] 34-35/RR

44. How much debt did you incur for your undergraduate education which was still outstanding when you got your bachelor's degree? (Circle one)

| None | Less than $500 | $500-$999 | $1,000-$1,999 | $2,000-$2,999 | $3,000-$4,499 | $4,500-and over |
|---|---|---|---|---|---|---|
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |

36/2

45. A. Which of the following types of loans did you use for financing your graduate studies? *(Circle any that apply in each column)*

| | This year | Graduate study in previous years |
|---|---|---|
| Tuition deferred for more than 3 months | 2 | Y |
| Other payment deferred to the University more than 3 months | 3 | X |
| Cash borrowed from University | 4 | 0 |
| National Defense Education Loan | 5 | 1 |
| Banks and insurance companies | 6 | 2 |
| Family loans which are to be repaid | 7 | 3 |
| Other specifically education loan (Circle and Specify) | 8 | 4 |
| None of the above | 9 | 5 |
| | 37/1 | 38/6 |

B. If you were to liquidate all your assets (i.e., equity in house and automobile, furniture, stocks, cash surrender value of life insurance, etc.), and pay off all your debts, how much money do you think would be left over? (Circle one) — 39/Y

$0 — $999 .......... 0
$1,000 — $4,999 .......... 1
$5,000 — $9,999 .......... 2
$10,000 or more .......... 3
I would still be in debt .......... X

C. How much debt will you have by the end of June, 1963? Include balance on time purchases; exclude mortgage.

IF NONE: Draw a line in the box.

$ ________ 40-41/XX

D. What will be the balance on your home mortgage by the end of June, 1963?

IF NONE: Draw a line in the box.

$ ________ 42-43/XX

## YOUR FINANCES

46. This question asks for financial *estimates*. Your individual answers will be kept completely confidential and will not be revealed to anyone. Only tabulations based on large numbers of students will be reported in this study. These will be extremely important in analyzing the financial problems of graduate students as a whole.

All the amounts should be for the whole year and should be strictly dollars amounts. For example, if you made about $100 per month on a part-time job for the twelve-month period, then enter

$ 1200

If you do not know the exact amount, enter your best estimate.
Please enter an amount in each box of the Financial Inventory.
If none, draw a line in the box

$ —

AN EXAMPLE OF A COMPLETED FINANCIAL INVENTORY IS PROVIDED IN THE ENCLOSURE ACCOMPANYING THIS QUESTIONNAIRE.

# ESTIMATED FINANCES FOR THE YEAR BEGINNING JULY 1, 1962 AND ENDING JUNE 30, 1963

## INCOMING

ANNUAL AMOUNTS IN DOLLARS

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME REMAINING TILL JUNE 30, 1963

APPROXIMATIONS ARE O.K.!

### I. YOUR STIPEND INCOME

*TRANSFER THESE AMOUNTS, IF ANY, FROM* QUESTION 29D

| | |
|---|---|
| 1st stipend | $ |
| 2nd stipend | $ |
| 3rd stipend | $ |

TOTAL ⟶ $

### II. OTHER INCOME

| | |
|---|---|
| *Part time and full time work (before taxes) | $ |
| Parents and relatives (gifts) | $ |
| Spouse's university job (before taxes) | $ |
| Spouse's non-university job (before taxes) | $ |
| Spouse's stipends | $ |
| Veterans and GI benefits | $ |
| Income from military service | $ |
| †Other—excluding IV and V below | $ |

TOTAL ⟶ $

### III. TOTAL OF I AND II ⟶ $

### IV. REDUCTION IN ASSETS (Amounts): $

withdraw savings; sell stock, car, house, property, etc.

### V. ADDITION TO LIABILITIES (Amounts):

| | |
|---|---|
| National Defense Education Act loan | $ |
| Other educational loans (e.g., deferred tuition) | $ |
| Other: installment debt, mortgages obtained since July, 1962 | $ |

TOTAL ⟶ $

### VI. TOTAL OF III, IV, AND V ⟶ $

**NOTE: Total IN (VI) and Total OUT (XII) should be equal. If not, please revise the amounts you have entered.**

*If you have a faculty appointment as instructor, assistant professor, etc., include this salary.

†Other income includes interest from savings accounts; dividends from stocks and bonds; income from property; royalties; honoraria; consultation and other professional activity, etc.

Deck

## ESTIMATED FINANCES FOR THE YEAR BEGINNING JULY 1, 1962 AND ENDING JUNE 30, 1963

### OUTGOING

ANNUAL AMOUNTS IN DOLLARS

MAKE LARGE, CLEAR NUMBERS

ESTIMATE FOR THE TIME REMAINING TILL JUNE 30, 1963

APPROXIMATIONS ARE O.K.!

**VII. ACADEMIC EXPENSES (SELF)**

A. TUITION AND FEES

| | | |
|---|---|---|
| Covered by stipend | $ | |
| Covered by cost of education allowances | $ | |
| Not covered by above | $ | |
| TOTAL → | | $ |

B. OTHER ACADEMIC EXPENSES

*INCLUDE AMOUNTS COVERED BY STIPEND*

| | | |
|---|---|---|
| Texts, reference books, journals | $ | |
| Instruments, equipment, supplies | $ | |
| Thesis expenses | $ | |
| Other, including tutorial costs | $ | |
| TOTAL → | | $ |

**VIII. TOTAL OF VII A AND VII B** → $

**IX. OTHER EXPENSES (SELF AND DEPENDENTS)**

*INCLUDE AMOUNTS COVERED BY STIPEND*

| | |
|---|---|
| *Living expenses | $ |
| †Transportation | $ |
| ‡Health and medical care | $ |
| §Other, excluding X and XI below | $ |

TOTAL → $

**X. ADDITION TO ASSETS (Amounts):**
Amount added to savings: buy stock, total value of house or car purchased since July, 1962, etc. $

**XI. REDUCTION IN LIABILITIES (Amounts):**
Amount repaid on loan; principal payments on car or house purchased prior to July, 1962; payments for deferred tuition; time payments, etc. $

**XII. TOTAL OF VIII, IX, X, AND XI** → $

**NOTE: Total IN (VI) and Total OUT (XII) should be equal. If not, please revise the amounts you have entered.**

*Housing; food, beverages; personal maintenance; utility bills, etc.
†Local public transportation; operate and maintain own car; travel etc.
‡Self and family: health insurance premiums; medical and dental bills; drugs, etc. Exclude expenses covered by health insurance.
§Entertainment, gifts, contributions; insurance, taxes; purchase of house furnishings and consumer durables; spouse's academic expenses, etc.

Deck 5

47. What is the least it would take to get you into graduate studies <u>full-time</u>? *(Circle only one)*

| | | |
|---|---|---|
| Doesn't apply to me as I am now studying full time | 2 | 44/1 |
| Tuition scholarship | 3 | |
| Tuition scholarship plus $500 stipend with no obligations | 4 | |
| Tuition scholarship plus $1,000 stipend with no obligations | 5 | |
| Tuition scholarship plus $2,000 stipend with no obligations | 6 | |
| Tuition scholarship plus $3,000 stipend with no obligations | 7 | |
| Tuition scholarship plus $4,000 stipend with no obligations | 8 | |
| None of the above would get me to go full time | 9 | |

IF "NONE OF THE ABOVE": Why not?

_______________________________________________ 45/R

_______________________________________________

# BACKGROUND AND GENERAL INFORMATION

48. What is your sex? (Circle one)

| | | |
|---|---|---|
| Male | 1 | 46/0 |
| Female | 2 | |

A. ANSWER IF FEMALE:

In the long run which one of the following do you really prefer and which one do you realistically expect? (Circle one in each column)

| | Really prefer (Circle one) | Realistically expect (Circle one) |
|---|---|---|
| Housewife only | 5 | X |
| Housewife with occasional employment | 6 | 0 |
| Housewife for a few years, employment later | 7 | 1 |
| Housewife with regular employment | 8 | 2 |
| Employment only | 9 | 3 |
| | 47/R | 48/R |

B. ANSWER IF MALE:

Have you ever served on full-time active duty in the armed services? (Circle one)

| | | |
|---|---|---|
| Yes | 8 | 49/R |
| No | 9 | |

IF YES: For how many years? (Circle one)

| | | |
|---|---|---|
| Less than one | 0 | 50/R |
| One | 1 | |
| Two | 2 | |
| Three | 3 | |
| Four or More | 4 | |

C. ANSWER IF MALE:

How has your present military status affected your plans for future education? (Circle as many as apply)

| | | |
|---|---|---|
| Not at all | 5 | 51/R |
| An influence toward: | | |
| postponing entry into my graduate studies | 6 | |
| beginning my graduate studies sooner | 7 | |
| interrupting my graduate studies | 8 | |
| not hurrying through my graduate studies | 9 | |

49. Your date or birth:

| Month | Day | Year |
|---|---|---|
| | | |

52-53/XX

50. Are you a U.S. citizen? (Circle one)

| | | |
|---|---|---|
| Yes, U.S. born | X | 54/Y |
| Yes, naturalized | 0 | |
| No, but I expect to stay in the U.S. | 1 | |
| No, and I do not expect to stay in the U.S. | 2 | |

51. Your racial background: (Circle one)

| | | |
|---|---|---|
| White (Caucasian) | 5 | 55/ |
| Negro | 6 | |
| Oriental | 7 | |
| American Indian | 8 | |
| Other (Circle and specify) ______ | 9 | |

52. What is your current marital status? *(Circle one)*

| | | |
|---|---|---|
| Single, no definite plans to be married at present | X | 56/Y |
| Single, have definite plans to be married *before* Sept. 1, 1963 | 0 | |
| Single, have definite plans to be married *after* Sept. 1, 1963 | 1 | |
| Widowed, Divorced, Separated | 2 | |
| Married, no previous marriage | 3 | |
| Married, a previous marriage | 4 | |

IF *EVER* MARRIED:

A. In what year were you first married? 19________ 57-58/RR

B. How many children do you have now *(Circle one)*

| | | |
|---|---|---|
| None | 0 | 59/R |
| One | 1 | |
| Two | 2 | |
| Three | 3 | |
| Four or more | 4 | |

C. What is the age of the oldest child? *(Fill in box.)*

IF YOU HAVE NO CHILDREN: *enter* "YY". [ ] 60-61/RR

IF NOW MARRIED AND NOT WIDOWED, DIVORCED OR SEPARATED, Answer D, E and F.

D. What is your spouse currently doing? *(Circle any which apply)*

| | | |
|---|---|---|
| Working at University | 4 | 62/R |
| Working elsewhere | 5 | |
| Military service (full-time active duty) | 6 | |
| Housewife, mother | 7 | |
| Going to school | 8 | |
| Other *(Circle and specify)*________ | 9 | |

E. IF YOUR SPOUSE IS GOING TO SCHOOL: For what degree? *(Circle one)*

| | | |
|---|---|---|
| Bachelor's | X | 63/R |
| Master's | 0 | |
| Doctor's | 1 | |
| None of the above | 2 | |

F. If your spouse has a stipend this year:

Which? *(Enter the code number from the back of covering letter that best describes the stipend with the highest value)* [ ][ ] 64-65/RR

Estimate its total value [$ ]

53. How many persons (excluding yourself) receive 50 per cent or more of their financial support from you? (INCLUDE spouse, children, others). *Write the number in the box.*

Number of dependents: [ ] 66/Y

54. Where were you living when you were graduated from high school and where do you live now? *(Circle one in each column)*

| | | Home State of High School Graduation (Circle one) | Now Living (Circle one) |
|---|---|---|---|
| NEW ENGLAND | Conn., Maine, Mass., N.H., R.I., Vt. | X | X |
| MIDDLE ATLANTIC | N.J., N.Y., Pa. | 0 | 0 |
| EAST NORTH CENTRAL | Ill., Ind., Mich., Ohio, Wis. | 1 | 1 |
| WEST NORTH CENTRAL | Iowa, Kan., Minn., Mo., Nebr., N.D., S.D. | 2 | 2 |
| SOUTH ATLANTIC | Del., D.C., Md., Fla., Ga., N.C., S.C., Va, W.Va. | 3 | 3 |
| EAST SOUTH CENTRAL | Ala., Ky., Miss., Tenn. | 4 | 4 |
| WEST SOUTH CENTRAL | Ark., La., Okla., Texas | 5 | 5 |
| MOUNTAIN | Ariz., Colo., Ida., Mont., Nev., N.Mex., Utah, Wyo. | 6 | 6 |
| WEST | Calif., Ore., Wash., Alaska, Hawaii | 7 | 7 |
| CANADA | | 8 | 8 |
| OTHER *(Circle and specify)* | | 9 | 9 |
| | | 67/Y | 68/Y |

55. Please indicate both the religion in which you were reared and your present religious preference. *(Circle one in each row)*

| | Protestant | Roman Catholic | Jewish | Other | None | |
|---|---|---|---|---|---|---|
| A. Religion in which you were reared *(Circle one)* | X | 0 | 1 | 2 | 3 | 69/Y |
| B. Present religious preference *(Circle one)* | 5 | 6 | 7 | 8 | 9 | 70/4 |

56. A. Where did you live when you were graduated from high school? *(Circle one)*

| Farm | A town (not a suburb of a larger place) with a population of | | A city or its suburbs (not part of a larger area) with a population of | | | A major population center with a total area population of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Less than 2,500 | 2,500 to 9,999 | 10,000 to 24,999 | 25,000 to 49,999 | 50,000 to 99,999 | 100,000 to 249,999 | 250,000 to 999,999 | 1,000,000 or more | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 71/0 |

B. Were you living *(Circle one)*

in the central city . . . . . . . . X 72/Y
suburb . . . . . . . . 0
other . . . . . . . . 1

57. Where do you live? *(Circle one)*

With my parents . . . . . . . . 2 73/1
University dormitory . . . . . . . . 3
University-owned apartment . . . . . . . . 4
University pre-fab or trailer . . . . . . . . 5
Room or apartment rented from a private landlord . . . . . . . . 6
Single-family house, rented . . . . . . . . 7
Single-family house, owned . . . . . . . . 8
Other *(Circle and Specify)* ________________ 9

58. Please indicate your parents' highest educational attainment at the time you were graduated from high school. *(Circle one in each column)*

| | Mother | Father |
|---|---|---|
| 8th grade or less | 4 | Y |
| Part high school | 5 | X |
| High school graduate | 6 | 0 |
| Part college | 7 | 1 |
| College graduate | 8 | 2 |
| Graduate or professional degree | 9 | 3 |
| | 74/3 | 75/4 |

59. Which of the following categories best describes the usual occupation of your father when you were graduated from high school? *(Circle one)*

| | | |
|---|---|---|
| Professional | 1 | 76/0 |
| Proprietor or manager | 2 | |
| Sales (Other than sales manager or administrator) | 3 | |
| Clerical | 4 | |
| Skilled worker | 5 | |
| Semi-skilled worker | 6 | |
| Service worker | 7 | |
| Unskilled worker | 8 | |
| Farmer or farm worker | 9 | |
| Retired *(Circle & indicate pre-retirement occupation above)* | Y | 77/R |
| Deceased *(Circle & indicate above occupation before his death)* | X | |

60. Which of the following was the appropriate income category for your paren s at the time you were graduated from high school. Consider annual income from all sources before taxes. *(Circle one)*

| | | |
|---|---|---|
| Less than $5,000 per year | 3 | 78/2 |
| $5,000 — $7,499 | 4 | |
| $7,500 — $9,999 | 5 | |
| $10,000 — $14,999 | 6 | |
| $15,000 — $19,999 | 7 | |
| $20,000 and over | 8 | |
| I have no idea | 9 | |

61. A. Please write the name of the institution which you are attending:

| Institution | City | State |
|---|---|---|
| | | |

B. In what school, college, or division (e. g., College of Engineering, College of Medicine, Graduate School of Arts and Sciences) are you enrolled?

C. In what department of that organizational unit?

62. Your replies to this questionnaire are completely confidential, and absolutely no information of any kind about specific persons will be released to your school or anyone else. Your sealed questionnaire will be read only by the research staff in Chicago. Because we hope to follow up some of the students in the sample to learn more about graduate students, we must ask you the following:

## PLEASE PRINT

A. YOUR NAME

| First Name | Middle Name | Last Name |
|---|---|---|
| | | |

B. YOUR MOST LIKELY ADDRESS A YEAR FROM NOW

| Name of residence hall, department, company, etc., if any |
|---|
| |

| Street Address |
|---|
| |

| City or Town | Zone | State or Country |
|---|---|---|
| | | |

C. NAME AND ADDRESS OF SOMEONE WHO WILL KNOW WHERE YOU ARE OR COULD FORWARD A LETTER TO YOU IF YOU WERE NOT AT THE ADDRESS YOU LISTED ABOVE

| First Name | Middle Name | Last Name |
|---|---|---|
| | | |

| Street Address |
|---|
| |

| City or Town | Zone | State or County |
|---|---|---|
| | | |

**INSTRUCTIONS FOR RETURNING QUESTIONNAIRE**

1. Please fold back on this line.

2. Insert in envelope. (If you have been provided with a "window envelope", make sure that the address below is displayed.)

APPENDIX 5

UNIVERSE ESTIMATES

The percentage distributions among the five composite fields of graduate study, as presented in the text, will provide sufficient information about the graduate students in these fields of study for many readers of this report. Others may be interested in the number of graduate students represented by these percentages.

Universe estimates are feasible for the thirty-seven detailed fields of study and for the five composite fields, given the total number of American graduate students enrolled for advanced degrees in each of these fields. This was calculated from two sources: (1) the proportion of American graduate students seeking an advanced degree in each field as reported in Appendix 3, Table A; and (2) total enrollment figures for each of the fields (save engineering), as shown in the Office of Education Survey of Students Enrolled for Advanced Degrees: Fall, 1962.[1] This information is presented in Table A-5.1.

TABLE A-5.1

ESTIMATED ENROLLMENT OF AMERICAN GRADUATE STUDENTS SEEKING ADVANCED DEGREES IN THIRTY-SEVEN FIELDS OF STUDY, 1962-1963

| Detailed and Composite Field | Enrollment, Fall, 1962 | Per Cent American Graduate Students Seeking Advanced Degrees | Enrollment, American Graduate Students |
|---|---|---|---|
| General physical science . . . | 486 | 94 | 456 |
| All other earth and physical sciences . . . . . . | 238 | 84 | 200 |
| Astronomy . . . . . . . . . . . | 423 | 86 | 364 |
| Chemistry . . . . . . . . . . . | 12,309 | 85 | 10,463 |
| Physics . . . . . . . . . . . . | 11,005 | 82 | 9,024 |
| Geography . . . . . . . . . . . | 1,281 | 83 | 1,063 |
| Geology and geophysics . . . . | 2,489 | 86 | 2,141 |
| Oceanography . . . . . . . . . | 238 | 85 | 202 |
| Metallurgy . . . . . . . . . . | 201 | 90 | 181 |
| Meterology . . . . . . . . . . | 374 | 86 | 322 |
| Mathematics . . . . . . . . . . | 14,121 | 88 | 12,426 |
| Total physical sciences . | | | 36,942 |

[1]Enrollment figures for the engineering fields were derived from Tolliver and Armsby (1963, Table B).

TABLE A-5.1--Continued

| Detailed and Composite Field | Enrollment, Fall, 1962 | Per Cent American Graduate Students Seeking Advanced Degrees | Enrollment, American Graduate Students |
|---|---|---|---|
| All other engineering . . . . | 13,016 | 79 | 10,283 |
| Civil engineering . . . . . . | 3,985 | 71 | 2,829 |
| Chemical engineering . . . . | 3,323 | 76 | 2,525 |
| Electrical engineering . . . | 13,377 | 84 | 11,2C3 |
| Mechanical engineering . . . | 7,131 | 80 | 5,704 |
| Total engineering . . . | | | 32,544 |
| All other biology . . . . . . | 2,734 | 79 | 2,160 |
| Anatomy . . . . . . . . . . . | 573 | 85 | 487 |
| General biology . . . . . . . | 3,658 | 90 | 3,292 |
| Biochemistry . . . . . . . . | 2,006 | 77 | 1,545 |
| Botany . . . . . . . . . . . | 1,398 | 84 | 1,174 |
| Biophysics . . . . . . . . . | 352 | 86 | 302 |
| Genetics . . . . . . . . . . | 570 | 72 | 410 |
| Microbiology . . . . . . . . | 2,155 | 83 | 1,787 |
| Pathology . . . . . . . . . . | 286 | 71 | 203 |
| Pharmacology . . . . . . . . | 538 | 81 | 436 |
| Physiology . . . . . . . . . | 1,061 | 82 | 870 |
| Zoology . . . . . . . . . . . | 2,437 | 90 | 2,193 |
| Agriculture . . . . . . . . . | 4,282 | 70 | 2,997 |
| Forestry . . . . . . . . . . | 713 | 79 | 563 |
| Total life sciences . . | | | 18,419 |
| Psychology . . . . . . . . . | 11,344 | 90 | 10,210 |
| Anthropology . . . . . . . . | 1,338 | 89 | 1,191 |
| Economics . . . . . . . . . . | 6,429 | 79 | 5,079 |
| Sociology . . . . . . . . . . | 3,924 | 85 | 3,335 |
| Total behavioral sciences | | | 19,815 |
| English . . . . . . . . . . . | 15,985 | 94 | 15,026 |
| History . . . . . . . . . . . | 10,671 | 94 | 10,030 |
| Total humanities . . . . | | | 25,056 |
| Social work . . . . . . . . . | 7,256 | 93 | 6,748 |
| Total social work . . . | | | 6,748 |

Universe estimates of the number of stipend holders for each of the thirty-seven fields of study and for the five composite fields can be prepared given the information in the preceding table. For example, the above table shows that a total of 2,829 American graduate students were seeking degrees in civil engineering, while Table 2 of Appendix 3 shows that 62 per cent of American graduate students seeking advanced degrees in civil engineering held at least one stipend during the academic year 1962-63. We estimate that the number of American graduate students working for advanced degrees in civil engineering in the spring term, 1963, and who held at least one stipend during 1962-63 was (.62) (2,829) = 1,754.

Similarly, Table 2.1 (Chapter 2) shows that 80 per cent of the students in the life science composite field had some form of stipend support: of the 18,419 American students seeking advanced degrees in this composite field of study, 14,735 held at least one stipend during the academic year 1962-63.

Assume that an estimate is needed of the number of Stage I American graduate students holding stipends in the engineering composite field.[2] Table 2.10 (Chapter 2) shows that Stage I American graduate students seeking advanced degrees in engineering comprised 519/1,280 or 40.5 per cent of the students in this field, and that 58 per cent of the Stage I engineering students held at least one stipend during the period under study.

> Universe estimate of the Stage I American graduate students in the composite field of Engineering: (.405)(32,544) = 13,180.
>
> Universe estimate of Stage I American graduate students in the composite field of engineering holding at least one stipend: (.58)(13,180) = 7,644.

For the convenience of the reader interested in the numbers of graduate students represented by the percentage distributions, we have applied the above technique to selected tables. In reading these tables several technical facts should be kept in mind:

These tables represent the estimated number of American graduate students in a given category as of fall, 1962. They are based on the estimation procedure described above. That is, the universe sizes are taken from the final column of Table A-5.1.

---

[2] These are first-year students.





The universe estimates were derived from tables which accompany the main body of the report or from tables which are similar to these. These tables represent proportions or percentages of the student population. The proportions were rounded to the nearest whole per cent. Because of this the universe estimates are not as precise as the reader may desire. Also, variations are attributable to different response rates for specific questions. Therefore, the sum of the estimates in a table will not always be equal to the estimate of a given sub-total or total, as these figures were independently percentaged. This also means that the sub-total and total universe estimates between tables will not be equal. It should clearly be kept in mind that these estimates are exactly that--estimates of the universe.

TABLE A-5.2

NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF STUDY

(Estimated Numbers of Graduate Students)

| Nonstipend Employment | Engineering | Humanities | Behavioral Science | Physical Science | Life Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Yes . . . . | 28,991 | 16,260 | 13,360 | 22,446 | 9,560 | 89,177 |
| No . . . . | 11,841 | 10,396 | 9,675 | 20,719 | 13,203 | 67,274 |
| Total | 40,832 | 26,656 | 23,035 | 43,165 | 22,763 | 156,451 |

TABLE A-5.3

EXTENT OF NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF GRADUATE STUDY

(Estimated Numbers of Graduate Students)

| Extent of Nonstipend Employment | Engineering | Physical Science | Humanities | Life Science | Behavioral Science | Total, Five Fields |
|---|---|---|---|---|---|---|
| Regular full time: 10-12 months . . . | 15,655 | 8,111 | 5,796 | 2,746 | 3,874 | 35,483 |
| Sporadic full time: 4-9 months . . . | 2,899 | 2,479 | 2,415 | 1,231 | 1,603 | 9,758 |
| Occasional full time: 3 months or less . . . . | 10,437 | 11,942 | 7,889 | 5,587 | 8,016 | 44,354 |
| Not employed full time at all . . . | 11,841 | 20,633 | 10,556 | 13,429 | 9,675 | 67,743 |

TABLE A-5.4

FIELD OF NONSTIPEND EMPLOYMENT AND COMPOSITE FIELD OF GRADUATE STUDY

(Estimated Numbers of Graduate Students)

| Field of Nonstipend Employment | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
|---|---|---|---|---|---|---|
| Physical science . . . . | 13,564 | 143 | 437 | 249 | 148 | 15,432 |
| Engineering . . . . . . . . | 2,967 | 25,899 | 175 | 249 | 295 | 28,293 |
| Health field . . . . . . | 212 | 114 | 787 | 249 | 148 | 1,715 |
| Life science . . . . . . | 843 | 114 | 5,682 | 498 | 443 | 8,574 |
| Education . . . . . . . . | 1,696 | 114 | 1,049 | 498 | 5,021 | 7,716 |
| Behavioral science . . . | 424 | 285 | 262 | 7,090 | 1,181 | 9,431 |
| Humanities . . . . . . . | 424 | 285 | 87 | 746 | 4,430 | 5,144 |
| Other . . . . . . . . . . . | 1,060 | 569 | 350 | 2,985 | 3,249 | 8,574 |
| Not employed . . . . . . | 21,971 | 12,372 | 14,022 | 10,596 | 11,889 | 70,716 |

TABLE A-5.5

NONSTIPEND EMPLOYER AND COMPOSITE FIELD OF GRADUATE STUDY

(Estimated Numbers of Graduate Students)

| Nonstipend Employer | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total, Five Fields |
|---|---|---|---|---|---|---|
| Self-employed . . . . . . | 863 | 408 | 455 | 921 | 1,333 | 4,694 |
| Private company . . . . . | 16,834 | 24,091 | 2,959 | 4,377 | 4,532 | 54,758 |
| Professional partnership | 432 | 408 | 91 | 230 | 533 | 1,565 |
| Research organization or institute . . . . . . . | 6,043 | 4,900 | 2,504 | 1,843 | 800 | 15,645 |
| College or university at which enrolled . . . . . | 7,338 | 6,941 | 7,284 | 4,607 | 4,532 | 29,726 |
| Another college or university . . . . . . . | 3,453 | 1,225 | 2,049 | 2,534 | 2,132 | 10,952 |
| Junior college or technical institute . . | 432 | 408 | 228 | 230 | 533 | 1,565 |
| Elementary or secondary school system . . . . . | 3,022 | 163 | 2,504 | 921 | 7,997 | 12,516 |
| Hospital, clinic, etc. . . | 863 | 163 | 2,276 | 3,916 | 1,866 | 9,387 |
| Federal government . . . | 4,748 | 3,675 | 2,504 | 2,304 | 1,599 | 15,645 |
| State, local government . | 1,295 | 1,225 | 1,366 | 1,612 | 1,066 | 6,258 |
| Other . . . . . . . . . . . | 1,293 | 817 | 683 | 2,073 | 1,597 | 6,258 |

TABLE A-5.6

STIPEND HOLDING AND COMPOSITE FIELD OF STUDY

(Estimated Numbers of American Graduate Students)

| Field of Graduate Study | First Stipend | Second Stipend | Third Stipend |
|---|---|---|---|
| Life science . . . . . . . . . . . . | 14,735 | 3,684 | 442 |
| Physical science . . . . . . . . . . | 27,263 | 8,842 | 1,842 |
| Behavioral science . . . . . . . . . | 12,483 | 3,963 | 793 |
| Engineering . . . . . . . . . . . . . | 19,852 | 5,207 | 976 |
| Humanities . . . . . . . . . . . . . | 11,526 | 2,756 | 501 |
| Total, five fields . . . . . . . | 87,566 | 25,208 | 3,980 |

TABLE A-5.7

TYPE OF FIRST BY TYPE OF SECOND STIPEND

(Estimated Numbers of American Graduate Students in Five Composite Fields of Study)

| Type of First Stipend | Type of Second Stipend | | | | | Total | |
|---|---|---|---|---|---|---|---|
| | None | Scholar-ship | Fellow-ship | Research Assistant-ship | Teaching Assistant-ship | First | First and Second |
| Scholarship . . . | 11,940 | 2,654 | 531 | 531 | 531 | 11,694 | 19,901 |
| Fellowship . . . | 17,248 | 1,327 | 2,654 | 1,328 | 2,654 | 25,208 | 27,861 |
| Research Assistantship . | 17,248 | 1,327 | 531 | 2,656 | 1,327 | 22,554 | 26,535 |
| Teaching Assistantship . | 17,248 | 1,327 | 1,327 | 2,656 | 1,327 | 23,882 | 29,189 |
| Total, second stipend . . | 63,684 | 6,634 | 3,507 | 5,634 | 1,634 | 87,566 | |

No stipend . . . 45,144

TABLE A-5.8

COMPOSITE FIELD OF STUDY AND TYPE OF STIPEND HELD

(Estimated Numbers of American Graduate Students Holding as Either First or Second Stipend)

| Composite Field of Study | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | Research Assistantship | Teaching Assistantship |
| Life science . . . . | 1,658 | 5,342 | 5,710 | 4,236 |
| Physical science . . | 5,158 | 7,737 | 8,842 | 11,789 |
| Behavioral science . | 2,180 | 4,756 | 4,756 | 3,369 |
| Engineering . . . . . | 7,811 | 5,532 | 5,532 | 4,231 |
| Humanities . . . . . | 3,257 | 3,257 | 1,002 | 5,262 |

TABLE A-5.9

TYPE OF FIRST STIPEND, TYPE OF SECOND STIPEND, COMPOSITE FIELD OF GRADUATE STUDY

(Estimated Numbers of American Graduate Students)

| Type of First Stipend | Type of Second Stipend: No Second | Scholarship | Fellowship | Research Assistantship | Teaching Assistantship | Total: First | First and Second |
|---|---|---|---|---|---|---|---|
| **a) Physical Sciences** | | | | | | | |
| Scholarship . . . . . . | 2,579 | 368 | - | 147 | 147 | 3,316 | 5,158 |
| Fellowship . . . . . . . | 4,053 | 358 | 737 | 368 | 1,105 | 7,000 | 7,737 |
| Research assistantship . | 5,158 | 368 | 368 | 737 | 737 | 7,000 | 8,842 |
| Teaching assistantship . | 6,632 | 737 | 737 | 1,105 | 737 | 9,947 | 11,789 |
| Total second . . . | 18,421 | 2,217 | 1,847 | 2,211 | 2,579 | 27,263 | |
| No stipend . . . . . 9,579 | | | | | | | |
| **b) Engineering** | | | | | | | |
| Scholarship . . . . . . | 5,532 | 976 | - | 130 | 130 | 6,834 | 7,811 |
| Fellowship . . . . . . . | 3,580 | 325 | 325 | 651 | 651 | 5,207 | 5,532 |
| Research assistantship . | 3,254 | 651 | 325 | 325 | 325 | 4,556 | 5,532 |
| Teaching assistantship . | 2,604 | 325 | 130 | 325 | 325 | 3,254 | 4,231 |
| Total second . . . | 14,970 | 2,278 | 651 | 1,302 | 976 | 19,852 | |
| No stipend . . . . . 12,692 | | | | | | | |
| **c) Life Sciences** | | | | | | | |
| Scholarship . . . . . . | 921 | 184 | 74 | 74 | 2 | 1,289 | 1,658 |
| Fellowship . . . . . . . | 3,684 | 184 | 368 | 184 | 368 | 4,973 | 5,342 |
| Research assistantship . | 4,052 | 184 | 184 | 368 | 368 | 5,157 | 5,710 |
| Teaching assistantship . | 2,579 | 184 | 184 | 368 | 184 | 3,500 | 4,236 |
| Total second . . . | 11,236 | 737 | 921 | 921 | 921 | 14,735 | |
| No stipend . . . . . 3,684 | | | | | | | |

TABLE A-5.9--Continued

d) Behavioral Sciences

| Type of First Stipend | Type of Second Stipend: No Second | Scholarship | Fellowship | Research Assistantship | Teaching Assistantship | Total: First | First and Second |
|---|---|---|---|---|---|---|---|
| Scholarship . . . . . | 991 | 198 | - | 79 | 79 | 1,189 | 2,180 |
| Fellowship . . . . . . | 3,170 | 198 | 396 | 396 | 198 | 4,359 | 4,756 |
| Research assistantship | 2,774 | 396 | 198 | 594 | 198 | 4,161 | 4,756 |
| Teaching assistantship | 1,783 | 198 | 198 | 396 | 198 | 2,972 | 3,369 |
| Total second . . | 8,719 | 991 | 594 | 1,387 | 793 | 12,483 | |

No stipend . . . . . 7,332

e) Humanities

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scholarship . . . . . | 2,255 | 251 | 100 | - | 100 | 2,756 | 3,257 |
| Fellowship . . . . . . | 2,004 | 251 | 251 | - | 501 | 3,007 | 3,257 |
| Research assistantship | 752 | 100 | 100 | 100 | - | 1,002 | 1,002 |
| Teaching assistantship | 3,758 | 251 | 251 | 100 | 501 | 5,011 | 5,262 |
| Total second . . | 9,020 | 1,002 | 501 | 251 | 752 | 11,526 | |

No stipend . . . . . 13,530

TABLE A-5.10

TYPE OF THIRD STIPEND

(Estimated Numbers of American Graduate Students)

| Composite Field of Study | Type of Third Stipend: Scholarship | Fellowship | Research Assistantship | Teaching Assistantship |
|---|---|---|---|---|
| Physical science . . . . | 5,894 | 4,053 | 8,842 | 5,526 |
| Engineering . . . . . . . | 7,160 | 1,627 | 651 | 1,953 |
| Life science . . . . . . | 1,658 | 1,289 | 2,394 | 737 |
| Behavioral science . . . | 1,585 | 1,387 | 2,180 | 1,982 |
| Humanities . . . . . . . | 1,253 | 1,253 | 1,253 | 501 |

TABLE A-5.11

SOURCE OF FIRST STIPEND AND COMPOSITE FIELD OF GRADUATE STUDY

(Estimated Numbers of American Graduate Students)

| Donor of Stipend | Composite Field of Graduate Study | | | | | |
|---|---|---|---|---|---|---|
| | Physical Science | Engineering | Life Science | Behavioral Science | Humanities | Total Five Fields |
| Atomic Energy Commission . . . . . . . . . . . . | 1,914 | 598 | 148 | - | - | 2,629 |
| Department of Defense . . . . . . . . . . . . . | 1,093 | 1,197 | 148 | 251 | 116 | 2,629 |
| National Science Foundation . . . . . . . . . . | 4,101 | 1,396 | 2,364 | 628 | - | 8,763 |
| Veterans Administration (excluding G.I. Bill) | 109 | 80 | - | 251 | - | 351 |
| National Aeronautics and Space Administration | 273 | 598 | 59 | 50 | - | 876 |
| Office of Education: | | | | | | |
| National Defense Education Act . . . . . . . | 820 | 399 | 443 | 754 | 928 | 3,505 |
| Other Office of Education . . . . . . . . . . | - | 80 | - | 126 | - | 351 |
| Public Health Service: | | | | | | |
| National Institutes of Health Fellowship Program . . . . . . . . . . . . . . . . . . | 273 | 80 | 886 | 1,131 | 46 | 2,629 |
| NIH Training Grant and Traineeship Program | 273 | 199 | 2,068 | 879 | - | 3,505 |
| Other Public Health Service . . . . . . . . . . | 273 | 199 | 443 | 503 | - | 1,753 |
| Other Federal government . . . . . . . . . . . . | 820 | 798 | 295 | 503 | 116 | 2,629 |
| Total U.S. Government . . . . . . | 10,115 | 5,785 | 6,795 | 4,900 | 1,160 | 29,795 |
| Private Foundation, Philanthropic Organizations, etc. . . . . . . . . . . . . . . . . . . . . . | 820 | 798 | 295 | 628 | 1,044 | 3,505 |
| Industrial or business corporation or firm . . | 2,734 | 6,384 | 295 | 251 | 116 | 9,640 |
| Directly from the school I am now attending . | 10,935 | 5,386 | 4,727 | 4,900 | 7,192 | 33,300 |
| The school I am attending, but I do not know the primary source . . . . . . . . . . . | 1,914 | 997 | 1,477 | 879 | 696 | 6,134 |
| State or local government (U.S.) . . . . . . . . | 273 | 399 | 886 | 754 | 1,160 | 4,382 |
| Foreign Government or other foreign source | 109 | - | - | - | - | 351 |
| Other . . . . . . . . . . . . . . . . . . . . . . . | 273 | 199 | 148 | 251 | 348 | 876 |
| Total non-U.S. Government . . . . . | 17,222 | 14,164 | 7,977 | 7,663 | 10,444 | 56,961 |
| Total University . . . . . . . . . | 27,337 | 19,949 | 14,772 | 12,563 | 11,601 | 87,632 |
| No Stipend . . . . . . . . . . . . | 9,505 | 12,595 | 3,647 | 7,252 | 13,455 | 45,044 |

TABLE A-5.12

COMPOSITE FIELD OF GRADUATE STUDY, SOURCE AND TYPE OF FIRST STIPEND

(Estimated Numbers of American Graduate Students)[a]

a) Physical Science

| Source of Stipend | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholar-ship | Fellow-ship | Research Assistantship | Teaching Assistantship |
| Atomic Energy Commission . . . . . | 109 | 109 | 1,634 | 109 |
| Department of Defense . . . . . . . | 109 | 109 | 817 | - |
| National Science Foundation . . . . | 272 | 2,996 | 817 | - |
| Veterans Administration (excluding G.I. Bill) . . . . . . . . . . . | - | 109 | - | - |
| National Aeronautics and Space Administration . . . . . . . . . | 109 | 109 | 109 | - |
| Office of Education: | | | | |
| National Defense Education Act . | 109 | 817 | - | - |
| Other Office of Education . . . | - | - | - | 109 |
| Public Health Service: | | | | |
| National Institutes of Health Fellowship Program . . . . . . | 109 | 109 | 109 | - |
| NIH Training Grant and Traineeship Program . . . . . . . . . | - | 109 | 109 | - |
| Other Public Health Service . . . . | 109 | 109 | 109 | - |
| Other Federal government . . . . . | 272 | 109 | 272 | 109 |
| Private foundation, philanthropic organizations, etc. . . . . . . . | 109 | 545 | 272 | 109 |
| Industrial or business corporation or firm . . . . . . . . . . . . . | 1,634 | 545 | 272 | 109 |
| Directly from the school I am now attending . . . . . . . . . . . . | 272 | 545 | 1,907 | 109 |
| The school I am attending, but I do not know the primary source . . . | 109 | 109 | 545 | 7,899 |
| State or local government (U.S.). . | 109 | 109 | 109 | 1,089 |
| Foreign government or other foreign source . . . . . . . . . . . . . . | - | 109 | - | 272 |
| Other . . . . . . . . . . . . . . . | 109 | 109 | 109 | 109 |

No stipend. . . . . 9,605

[a]Estimated from Table 2.6.

TABLE A-5.12--Continued

b) Engineering

| Source of Stipend | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholar-ship | Fellow-ship | Research Assistantship | Teaching Assistantship |
| Atomic Energy Commission . . . . . | 80 | 80 | 80 | - |
| Department of Defense . . . . . . . | 399 | 80 | 598 | - |
| National Science Foundation . . . . | 80 | 997 | 399 | - |
| Veterans Administration (excluding G.I. Bill) . . . . . . . . . . . | 80 | - | - | - |
| National Aeronautics and Space Administration . . . . . . . . . | 399 | 80 | 80 | - |
| Office of Education: | | | | |
| National Defense Education Act | - | 399 | 80 | - |
| Other Office of Education . . . | - | 80 | - | - |
| Public Health Service: | | | | |
| National Institutes of Health Fellowship Program . . . . . . | - | 80 | - | 80 |
| NIH Training Grant and Traineeship Program . . . . . | - | 80 | 80 | - |
| Other Public Health Service . . . . | - | 80 | 80 | - |
| Other Federal government . . . . . | 199 | 80 | 399 | - |
| Private foundation, philanthropic organization, etc. . . . . . . . | 80 | 598 | 80 | - |
| Industrial or business corporation or firm . . . . . . . . . . . . . | 4,389 | 1,596 | 399 | 80 |
| Directly from the school I am now attending . . . . . . . . . . . . | 598 | 399 | 1,596 | 2,793 |
| The school I am attending, but I do not know the primary source . . . | 80 | 80 | 399 | 399 |
| State or local government (U.S.) . | 199 | 80 | 80 | 80 |
| Foreign government or other foreign source . . . . . . . . . | - | - | - | - |
| Other . . . . . . . . . . . . . . . . | 80 | 80 | 80 | 80 |

No stipend . . . . . . 12,595

TABLE A-5.12--Continued

c) Life Science

| Source of Stipend | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholarship | Fellowship | Research Assistantship | Teaching Assistantship |
| Atomic Energy Commission . . . . . | - | 59 | 59 | - |
| Department of Defense . . . . . . . | 59 | 59 | - | - |
| National Science Foundation . . . . | 59 | 1,447 | 590 | 59 |
| Veterans Administration (excluding G.I. Bill) . . . . . . . . . . . | - | - | - | - |
| National Aeronautics and Space Administration . . . . . . . . . | - | - | 59 | - |
| Office of Education: | | | | |
| National Defense Education Act . | - | 295 | 59 | - |
| Other Office of Education . . . . | - | - | - | - |
| Public Health Service: | | | | |
| National Institutes of Health Fellowship Program . . . . . . | 59 | 590 | 148 | - |
| NIH Training Grant and Traineeship Program . . . . . . | - | 1,329 | 443 | 148 |
| Other Public Health Service . . . . | - | 59 | 295 | 59 |
| Other Federal government . . . . . | 59 | 59 | 295 | - |
| Private foundation philanthropic organization, etc. . . . . . . . | - | 59 | 59 | 59 |
| Industrial or business corporation or firm . . . . . . . . . . . . . | 59 | 59 | 148 | 59 |
| Directly from the school I am now attending . . . . . . . . . . . | 295 | 295 | 1,477 | 2,659 |
| The school I am attending, but I do not know the primary source . . . | 59 | 148 | 886 | 443 |
| State or local government (U.S.) . | 443 | 59 | 295 | 59 |
| Foreign government or other foreign source . . . . . . . . . . . . . | - | - | - | - |
| Other . . . . . . . . . . . . . . . | - | - | 59 | 59 |

No stipend . . . . . . 3,647

TABLE A-5.12--Continued

d) Behavioral Science

| Source of Stipend | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholar-ship | Fellow-Ship | Research Assistantship | Teaching Assistantship |
| Atomic Energy Commission . . . . . | - | - | - | - |
| Department of Defense . . . . . . . | 50 | 50 | 125 | - |
| National Science Foundation . . . . | - | 377 | 251 | - |
| Veterans Administration (excluding G.I. Bill) . . . . . . . . . . . | 50 | 50 | 125 | 50 |
| National Aeronautics and Space Administration . . . . . . . . . | - | - | 50 | - |
| Office of Education: | | | | |
| National Defense Education Act . | 50 | 628 | - | - |
| Other Office of Education . . . . | - | 50 | 50 | - |
| Public Health Service: | | | | |
| National Institutes of Health Fellowship Program . . . . . . | 50 | 508 | 125 | 50 |
| NIH Training Grant and Traineeship Program . . . . . . | 50 | 879 | 125 | 50 |
| Other Public Health Service . . . . | - | 125 | 251 | - |
| Other Federal government . . . . . | 50 | 50 | 377 | - |
| Private foundation, philanthropic organization, etc. . . . . . . . | 50 | 503 | 125 | - |
| Industrial or business corporation or firm . . . . . . . . . . . . . | 125 | 125 | 50 | - |
| Directly from the school I am now attending . . . . . . . . . . . . | 503 | 503 | 1,507 | 2,387 |
| The school I am attending, but I do not know the primary source . . . | 50 | 50 | 503 | 251 |
| State or local government (U.S.) . | 125 | 125 | 251 | 125 |
| Foreign government or other foreign source . . . . . . . . . . . . . | - | - | - | - |
| Other . . . . . . . . . . . . . . . | 125 | 50 | 125 | 50 |

No stipend . . . . . . . 7,252

TABLE A-5.12--Continued

e) Humanities

| Source of Stipend | Type of Stipend | | | |
|---|---|---|---|---|
| | Scholar-ship | Fellow-ship | Research Assistantship | Teaching Assistantship |
| Atomic Energy Commission . . . . . | - | - | - | - |
| Department of Defense . . . . . . . . | 46 | 46 | - | - |
| National Science Foundation . . . . | - | - | - | - |
| Veterans Administration (excluding G.I. Bill) . . . . . . . . . . . | - | - | - | - |
| National Aeronautics and Space Administration . . . . . . . . . | - | - | - | - |
| Office of Education: | | | | |
| National Defense Education Act . | 46 | 812 | 46 | 46 |
| Other Office of Education . . . . | - | - | - | - |
| Public Health Service: | | | | |
| National Institutes of Health Fellowship Program . . . . . . | - | - | 46 | - |
| NIH Training Grant and Traineeship Program . . . . . . | - | - | - | - |
| Other Public Health Service . . . . | - | - | - | - |
| Other Federal government . . . . . | 46 | 46 | 46 | - |
| Private foundation, philanthropic organization, etc. . . . . . . . | 116 | 812 | 46 | 46 |
| Industrial or business corporation or firm . . . . . . . . . . . . . | 46 | 46 | - | - |
| Directly from the school I am now attending . . . . . . . . . . . . | 1,276 | 812 | 696 | 4,292 |
| The school I am attending, but I do not know the primary source . . . | 116 | 232 | 46 | 232 |
| State or local government (U.S.) . | 812 | 232 | - | 46 |
| Foreign government or other foreign source . . . . . . . . . | - | - | - | - |
| Other . . . . . . . . . . . . . . . . | 46 | 46 | 46 | 46 |
| No stipend . . . . . . . 13,455 | | | | |

TABLE A-5.13

STIPENDS (SOURCE TYPE) HELD MOST FREQUENTLY BY AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS OF STUDY

(Estimated Numbers of American Graduate Students)

a) Physical Sciences

| First Stipend | Second Stipend | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | None | Teaching Assistant ship from School | Fellow-ship from NSF | Research Assistant-ship from School | Scholar-ship from Industry | All Other | First | First and Second |
| Teaching assis-tantship from school . . . . | 6,263 | 368 | 368 | 368 | 147 | 1,842 | 9,211 | 11,053 |
| Fellowship from NSF . . . . . . | 1,842 | 368 | 368 | 147 | - | 368 | 3,315 | 3,684 |
| Research assis-tantship from school . . . . | 1,474 | 368 | 147 | 147 | - | 368 | 2,211 | 2,947 |
| Scholarship from industry . . . | 1,474 | - | - | - | 147 | 147 | 1,474 | 1,474 |
| All other . . . | 7,368 | 1,105 | 147 | 368 | - | 1,842 | 11,053 | 13,632 |
| Total second . | 18,421 | 2,211 | 737 | 737 | 147 | 4,421 | 27,263 | |

No stipend . . . . . 9,579

b) Engineering

| First Stipend | Second Stipend | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|
| | None | Scholar-ship from Industry | Teaching Assis-tantship from School | Research Assis-tantship from School | Fellow-ship from Industry | All Other | First | First and Second |
| Scholarship from industry . . . | 3,580 | 651 | - | 130 | - | - | 4,231 | 4,556 |
| Teaching assis-tantship from school . . . . | 2,278 | - | 130 | 130 | - | 325 | 3,254 | 3,905 |
| Research assis-tantship from school . . . . | 1,627 | 130 | 130 | 130 | 130 | 130 | 1,953 | 2,604 |
| Fellowship from industry . . . | 1,301 | 130 | 130 | 130 | 130 | 325 | 1,627 | 1,627 |
| All other . . . | 6,183 | 130 | 651 | 325 | 130 | 1,627 | 8,787 | 9,763 |
| Total second . | 15,296 | 976 | 976 | 651 | 130 | 2,604 | 20,177 | |

No stipend . . . . . 12,692

TABLE A-5.13--Continued

c) Life Science

| First Stipend | Second Stipend: None | Second Stipend: Teaching Assistantship from School | Second Stipend: Research Assistantship from School | Second Stipend: Fellowship from NIH | Second Stipend: Fellowship from NSF | Second Stipend: All Other | Total: First | Total: First and Second |
|---|---|---|---|---|---|---|---|---|
| Teaching assistantship from school . . . . | 2,210 | 184 | 184 | 74 | 184 | 368 | 3,131 | 3,684 |
| Research assistantship from school . . . . | 2,026 | 74 | 74 | - | - | 184 | 2,394 | 2,763 |
| Fellowship from NIH . . . . . | 1,474 | 184 | 74 | 74 | - | 184 | 2,026 | 2,210 |
| Fellowship from NSF . . . . . | 1,105 | 184 | 74 | - | 184 | 184 | 1,474 | 1,658 |
| All other . . . | 4,236 | 368 | 184 | 74 | 74 | 921 | 5,894 | 6,815 |
| Total second. | 11,604 | 737 | 368 | 184 | 368 | 1,842 | 16,050 | |

No stipend . . . . . 3,684

d) Behavioral Science

| First Stipend | Second Stipend: None | Second Stipend: Teaching Assistantship from School | Second Stipend: Research Assistantship from School | Second Stipend: Fellowship from NIH | Second Stipend: Fellowship from NDEA | Second Stipend: All Other | Total: First | Total: First and Second |
|---|---|---|---|---|---|---|---|---|
| Teaching assistantship from school . . . . | 1,585 | 198 | 198 | - | 79 | 594 | 2,774 | 3,170 |
| Research assistantship from school . . . . | 1,387 | 79 | 79 | - | - | 396 | 1,982 | 2,576 |
| Fellowship from NIH . . . . . | 1,189 | 79 | 198 | - | - | 198 | 1,585 | 1,585 |
| Fellowship from NDEA . . . . . | 396 | 79 | 79 | - | 79 | 198 | 594 | 793 |
| All other . . . | 4,161 | 198 | 198 | 79 | 79 | 991 | 5,746 | 7,133 |
| Total second. | 8,917 | 594 | 793 | 79 | 79 | 2,180 | 12,682 | |

No stipend . . . . . 7,332

TABLE A-5.13--Continued

e) Humanities

| First Stipend | Second Stipend: None | Second Stipend: Teaching Assistantship from School | Second Stipend: Scholarship from School | Second Stipend: Fellowship from Foundation | Second Stipend: Fellowship from School | Second Stipend: All Other | Total: First | Total: First and Second |
|---|---|---|---|---|---|---|---|---|
| Teaching assistantship from school . . . . | 3,758 | 501 | 251 | 100 | 100 | 251 | 4,761 | 5,262 |
| Scholarship from school . | 1,002 | 100 | 251 | 100 | - | 100 | 1,503 | 2,004 |
| Fellowship from foundation . . | 752 | 100 | 100 | 100 | - | 100 | 752 | 1,002 |
| Fellowship from school . . . . | 752 | 251 | 100 | - | 100 | - | 1,002 | 1,253 |
| All other . . . | 2,756 | 251 | 251 | - | 100 | 501 | 3,758 | 4,009 |
| Total second | 9,271 | 1,002 | 752 | 100 | 251 | 752 | 11,776 | |

No stipend . . . . . 13,530

TABLE A-5.14

CASH VALUE OF ALL STIPENDS HELD AND COMPOSITE FIELD OF GRADUATE STUDY, AMERICAN GRADUATE STUDENTS IN FIVE COMPOSITE FIELDS

(Estimated Numbers of American Graduate Students)

| Composite Field of Study | Cash Value of All Stipends | | | | | | | | Median Value (Approximate) |
|---|---|---|---|---|---|---|---|---|---|
| | None | Less than $999 | $1,000-$1,499 | $1,500-2,499 | $2,500-2,999 | $3,000-4,999 | $5,000-7,999 | $8,000 or More | |
| Life science . . . . . . | $3,500 | $2,026 | $ 737 | $3,684 | $2,947 | $4,789 | $ 553 | $ 74 | $2,700 |
| Physical science . . . . | 9,211 | 4,053 | 1,474 | 7,000 | 4,421 | 9,579 | 737 | 147 | 2,646 |
| Behavioral science . . . | 7,133 | 1,585 | 991 | 3,963 | 2,180 | 3,369 | 594 | 79 | 2,350 |
| Engineering . . . . . . | 12,367 | 6,834 | 1,302 | 3,254 | 2,604 | 4,882 | 976 | 325 | 2,200 |
| Humanities . . . . . . . | 13,280 | 3,007 | 752 | 4,260 | 1,503 | 2,255 | 100 | - | 2,000 |
| Total all fields . | 43,783 | 17,247 | 5,307 | 22,555 | 14,594 | 25,208 | 2,654 | 531 | |

APPENDIX 6

# SAMPLING ERROR COMPUTATIONS FOR STUDY OF GRADUATE STUDENT FINANCES

By

Seymour Sudman

The complex fashion in which this sample was selected clearly makes the use of simple random sampling error formulas inappropriate. In the first place, thirteen of the fields were sampled completely so that the sampling error for them is zero. In most other fields, the proportion of students sampled as a fraction of the total universe is large enough so that the finite correction factor becomes important. The use of the finite correction factor, of course, implies that we are considering all the students in a field during 1962-63 as the total universe, and not as a sample in time of past and future students in that field.

Second, the sample of graduate students is clustered, which would tend to increase the sampling variability. Based on comparisons of many items, it is conservatively estimated that the intraclass correlation $\delta$ is about .1, so that the variance of the cluster estimates is about 1.9 times as large as the variance of a simple random sample of the same size. This comes from the formula in Hansen, Hurwitz, and Madow (1953, pp. 259 ff.):

$$S^2_{cluster} = S^2_{random} \quad [1 + \delta(\tilde{n} - 1)],$$

where $\tilde{n}$ the average cluster size is 10 here.

To facilitate computations, the finite correction factor and cluster factor have been combined in Table A-6.1 to give a factor for each field which can be multiplied by the simple random sampling error formulas to estimate the true standard errors. The random sampling error formulas for various sample sizes and proportions are shown in Table A-6.2. Combining the two tables should enable the reader to estimate the standard error with one multiplication.

As an example, consider the finding that 19 per cent of the graduate students in chemistry hold no stipends. From Table A-6.1, the field factor for chemistry is 1.33. Since the percentage is based on 576 cases the random sampling error from Table A-6.2 is 1.6 per cent. Multiplying 1.33 x 1.6 gives 2.1 per cent which is the estimated absolute standard error. Thus at the two sigma level, the estimate of 19 per cent could be as low as 14.8 per cent or as high as 23.2 per cent.

TABLE A-6.1

FIELD FACTORS FOR COMPUTING SAMPLING ERRORS

| Detailed Field of Study | Factor $\sqrt{(1-f)\ [1+\delta\ (\tilde{n}-1)\ ]}$ |
|---|---|
| Agriculture | 1.20 |
| General biology | 1.14 |
| Botany | .88 |
| Zoology | 1.11 |
| Microbiology | 1.06 |
| Biochemistry | 1.04 |
| Biophysics | 0 |
| Anatomy | 0 |
| Genetics | 0 |
| Pathology | 0 |
| Pharmacology | 0 |
| Physiology | 0 |
| All other biology | 1.24 |
| Social work | 1.25 |
| English | 1.34 |
| Forestry | 0 |
| Geography | .36 |
| Mathematics | 1.34 |
| General physical science | 0 |
| Astronomy | 0 |
| Chemistry | 1.33 |
| Metallurgy | 0 |
| Meteorology | 0 |
| Physics | 1.33 |
| Geology and geophysics | 1.14 |
| Oceanography | 0 |
| Other earth and physical science | 0 |
| Psychology | 1.28 |
| Anthropology | .75 |
| Economics | 1.24 |
| History | 1.31 |
| Sociology | 1.19 |
| Chemical engineering | 1.06 |
| Civil engineering | 1.14 |
| Electrical engineering | 1.30 |
| Mechanical engineering | 1.22 |
| Other engineering | 1.29 |
| Composite field of study: | |
| Life sciences | .92 |
| Physical sciences | 1.23 |
| Behavioral sciences | 1.22 |
| Engineering | 1.25 |
| Humanities | 1.33 |

TABLE A-6.2

RANDOM SAMPLING ERRORS FOR VARIOUS SAMPLE SIZES
AND PROPORTIONS (1 STANDARD ERROR)

| Proportion (Per Cent) | Sample Size (Per Cent) | | | | | |
|---|---|---|---|---|---|---|
| | 100 | 200 | 400 | 600 | 800 | 1,000 |
| 5-95 . . . . . . . . | 2.2 | 1.5 | 1.1 | 0.9 | 0.8 | 0.7 |
| 10-90 . . . . . . . . | 3.0 | 2.1 | 1.5 | 1.2 | 1.1 | 0.9 |
| 20-80 . . . . . . . . | 4.0 | 2.8 | 2.0 | 1.6 | 1.4 | 1.3 |
| 30-70 . . . . . . . . | 4.6 | 3.2 | 2.3 | 1.8 | 1.6 | 1.4 |
| 40-60 . . . . . . . . | 4.9 | 3.5 | 2.4 | 2.0 | 1.7 | 1.5 |
| 50-50 . . . . . . . . | 5.0 | 3.5 | 2.5 | 2.0 | 1.8 | 1.6 |

APPENDIX 7

A NOTE ON THE VALIDITY OF

STUDENT RESPONSES

Throughout the report many relationships were presented that involve the source of the stipend reported by students in the sample. It was shown, for example, that Federal and non-Federal agencies differed in the types of support offered and in the levels of support made available among different fields of graduate study. Similarly, agencies within the Federal government were shown to differ in respect to these aspects of graduate education.

While these findings were informative, it would be helpful to have independent evidence on the validity of student designations of supporting agencies. To meet this need, NORC and the National Science Foundation (NSF) collaborated on a study to assess the accuracy of reporting among students in the total sample who indicated they secured stipend support in the form of a fellowship (defined in the Graduate Student Finance Survey as a "duty-free stipend for tuition plus a cash grant") from the National Science Foundation.

A total of 20,114 students returned usable questionnaires by the time field operations were terminated. Questionnaires were extracted from the files for students who reported an NSF fellowship during 1962-63 as their first, second, or third stipend. A total of 758 students were located who reported at least one NSF fellowship (seven of these students held two NSF fellowships). The remaining questionnaires were alphabetized.

Lists were received from NSF for selected NSF fellowship programs. These lists were alphabetized and compared with the two lists at NORC. Further investigation of the status of students reporting themselves to be NSF fellows was conducted in the Fellowship Section of NSF and in other programs conducted by the Foundation. The results are shown in Table A-7.1.

Over two out of three students (67 per cent) identifying themselves as NSF fellows were so listed on the rosters of the several Foundation fellowship programs. Most of the remainder, of course, had some form of NSF support, but it did not fall within the definition of "fellowship" employed at the Foundation. Thus Institute participants (21 per cent of the cases) were recipients of "non-duty stipends covering tuition plus a cash grant," which is the definition of "fellowship" employed in this study. Seventy-four students were not identified by NSF as recipients of a fellowship despite their reporting this to be the case in the course of the survey;

TABLE A-7.1

NATIONAL SCIENCE FOUNDATION PROGRAM STATUS OF STUDENTS REPORTING THEMSELVES AS NSF FELLOWS, 1962-63, IN THE GRADUATE STUDENT FINANCE SURVEY

| NSF Program | N | Per Cent |
|---|---|---|
| Fellowship programs[a] . . . . . . . | 509 | 67 |
| Institutes[b] . . . . . . . . . . . . | 158 | 21 |
| Special projects in science education . . . . . . . . . . . | 17 | 2 |
| Not identified as a recipient . . . | 74 | 10 |
| Total . . . . . . . . . . . | 758[c] | 100 |

[a]The following fellowship programs: (1) Cooperative Graduate Fellowship Program for Fiscal Year 1962--Fellowship Awards; (2) Graduate Fellowship Program for Fiscal Year 1962--Fellowship Awards; (3) Program of Summer Fellowships for Graduate Teaching Assistants for Fiscal Year 1962; (4) lists for the cooperative and the graduate fellowship programs for the prior fiscal year, and for the teaching assistant program for the prior summer. (These latter lists did not cover the span of time relevant to the survey but were included presumably on the assumption of the possibility of some deferred starters who would be fellows in the relevant period [fiscal year 1962] and not appear on the relevant list.) (5) Science Faculty Fellowship Program; and (6) Summer Fellowships for Secondary School Teachers.

[b]The following Institute Programs: (1) 1962 summer; (2) 1962-63 academic year; and (3) 1962-63 in-service.

[c]Excluded are 22 students listed as bonafide NSF Fellows by the Foundation who failed to provide this information in the course of filling out their questionnaires.

an additional search of other Institute programs not covered to date, and a pairing of names with participants of other Foundation programs such as Advanced Science Seminars, Supplementary Training for Science Teachers, etc., would have further reduced the number in this group.[1] Finally, a number of graduate students working on research supported by the Foundation possibly misclassified their type of support.

[1]Personal communication from William A. Jaracz, Study Director, Science Education Studies Group, Office of Economic and Manpower Studies.

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